

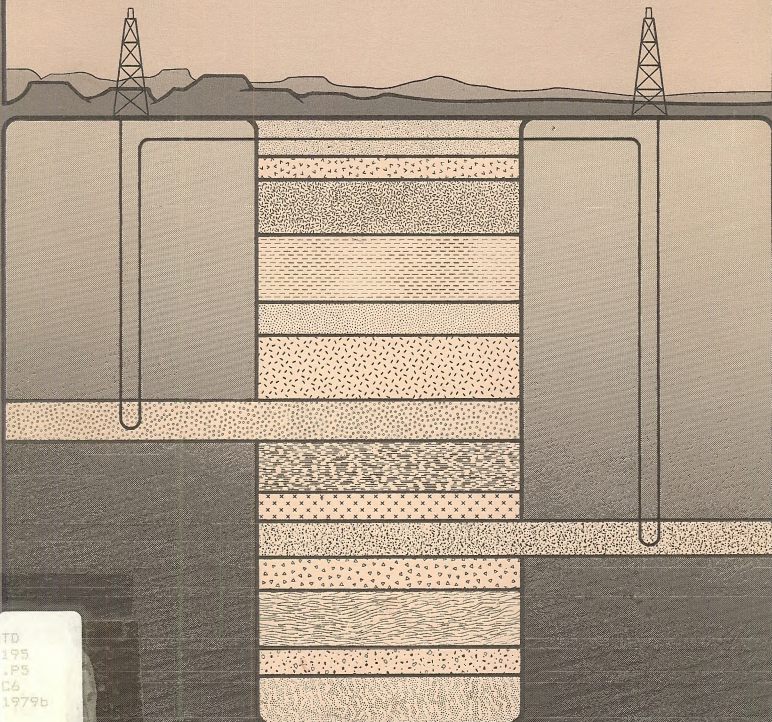


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Final

Environmental Impact Statement CO₂ Project

Wasson Field/Denver Unit



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Department of the Interior/Bureau of Land Management

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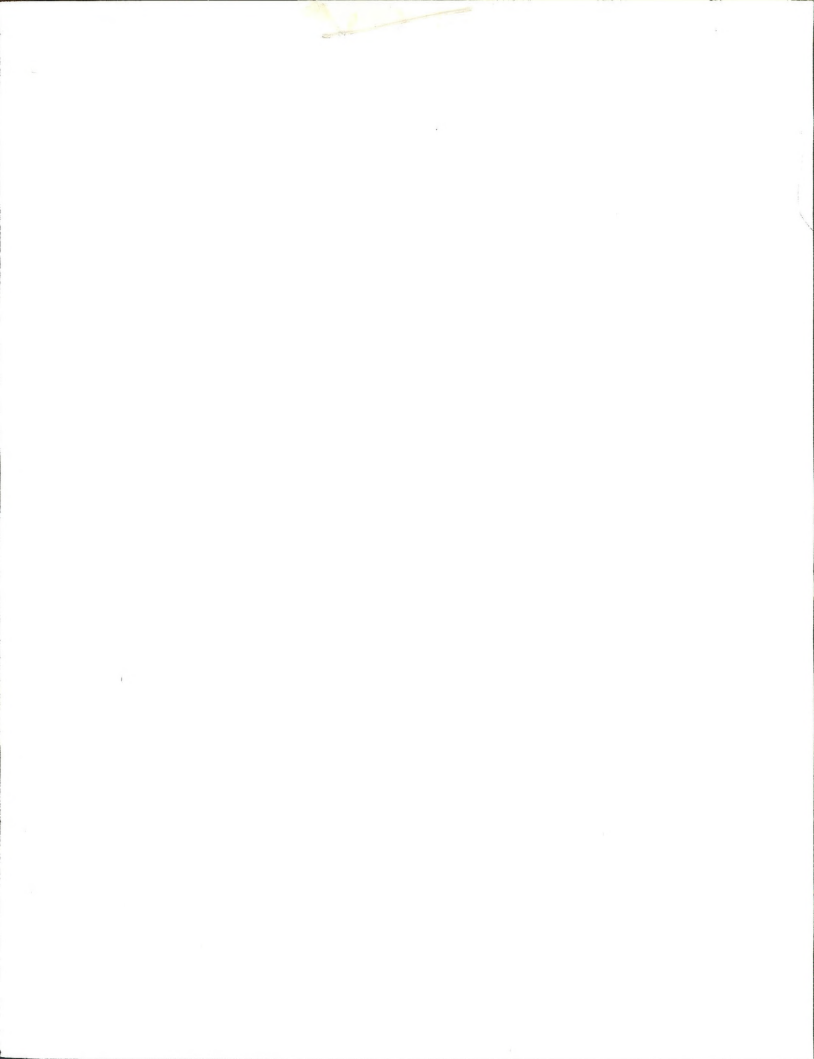
NOTICE

Enclosed is the Final Environmental Impact Statement for the Proposed CO₂ Project. This Final Environmental Impact Statement includes a Summary of the Draft Statement, changes to the Draft resulting from public review and comment, a record of the public comments on the Draft, and the responses to those comments. The Draft Environmental Impact Statement and this volume together constitute the Final Environmental Impact Statement.

A handwritten signature in dark ink, reading "Arthur W. Zimmerman", is written over a horizontal line.

Arthur W. Zimmerman

State Director, New Mexico



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DEPARTMENT OF THE INTERIOR

FINAL

ENVIRONMENTAL IMPACT STATEMENT

ON THE

CO₂ PROJECT

WASSON FIELD/DENVER UNIT

PREPARED BY

BUREAU OF LAND MANAGEMENT

DEPARTMENT OF THE INTERIOR



DIRECTOR, BUREAU OF LAND MANAGEMENT

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CO₂ PROPOSED PROJECT

Draft ()

Final (X)

Environmental Statement

Department of the Interior, Bureau of Land Management

1. Type of Action: Administrative (x) Legislative ()
2. Brief Description of Action: The proposed action is based on an application for rights-of-way for a pipeline and related facilities to transport CO₂ from southwest Colorado through New Mexico to the Wasson Oil Field near Denver City, Texas and associated drilling authorizations within the CO₂ well field. Components of the proposed action are: a CO₂ well field in southwest Colorado consisting of 140 wells and 13 central facilities with the necessary access roads and connecting pipelines; a main pipeline 478 miles long; injection in the oil field; a microwave communication system of 14 towers; and electric transmission lines to provide necessary power requirements.
3. Summary of Environmental Impacts
 - a. Temporary disturbance of 6551 acres of which 397 would be permanently disturbed.
 - b. Removal of 400 million standard cubic feet of CO₂ per day from the reservoir. Some of the CO₂ would be recovered at the oil field.
 - c. There would be local increases in fugitive dust and road traffic during construction.
 - d. There would be some opportunity for short-term jobs for unskilled labor.
 - e. There would be an increase in the tax base.
 - f. As much as 280 million additional barrels of oil would be recovered by the proposed action.
 - g. The visual aspects of the area would be impacted by the construction of wells, access roads, pipelines, and other proposed facilities.
 - h. The cultural resources would be avoided whenever possible. There may be some loss of cultural resources which have no surface manifestations.
4. Alternative Considered: The alternatives considered are a no-action alternative and variations in the routes of the main pipeline, CO₂ gathering lines, and transmission lines. There are no alternative locations for the CO₂ well field and each well site would be analyzed individually.
5. Comments on the Draft Environmental Statement Have Been Requested From Various Agencies and Interest Groups: See in summary list.
6. Date Draft Environmental Impact Statement was made available to EPA and the Public: July 13, 1979.
7. Date Final Environmental Impact Statement was made available to EPA and the Public:



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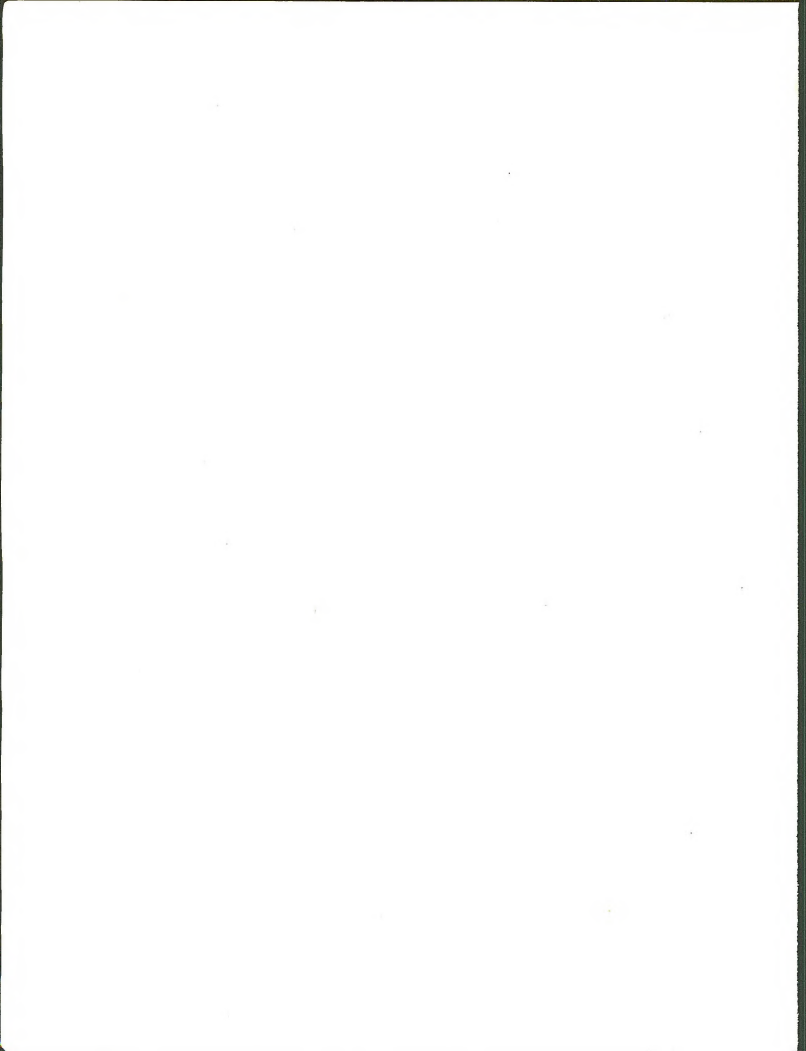
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PREFACE

The Final Environmental Impact Statement (FEIS) on the Wasson/Field Denver Unit CO₂ Project consists of two volumes. Volume One is the Draft Environmental Statement (Int. DES 79-37), prepared according to BLM manuals.

Since comments received on the DES did not require significant changes in the data, analysis, or conclusions it was not reprinted in its entirety. This is Volume Two which consists of a summary of the DES, written comments received during the public review process, substantive comments presented at public hearings, and the responses to the comments. The referencing of the DES by page number and paragraph has been done for additions, deletions, modifications, or references to the DES. Some explanations have been added in the responses for clarification as to why no response is necessary for some comments.

A limited number of copies of Volume One of the FEIS are available on request from the Bureau of Land Management, New Mexico State Office, P.O. Box 1449, Santa Fe, New Mexico, 87501.

PROPOSED ACTION

The proposed action would be located in Colorado, New Mexico and Texas. It includes development of two CO₂ well fields and associated facilities in southwestern Colorado; construction and operation of an interstate CO₂ pipeline and associated microwave stations across parts of Colorado, New Mexico, and Texas; and development of facilities for receiving, injecting, recovering, and reinjecting CO₂ in the Denver Unit of the Wasson Oil Field in Texas (Vol. 1, Map 1-1).

Well Field

The components of the well fields include 140 CO₂ wells, 192 miles of wet - CO₂ gathering lines, 13 central facilities, 126 miles of dry CO₂ gathering lines, and an electric power system.

The number, type and location of well field facilities discussed in this report are typical and idealized. Location and numbers are subject to change as knowledge of the reservoir changes. Types of facilities may change as technological advances are made. Appropriate environmental review will be made of any changes.

Construction. Construction would occur from 1981 through 1986.

Access. Of the 159 miles of access road, 39 would be new construction. The 120 miles of existing road would be upgraded. Access to the Doe Canyon Field would be by an existing county road from Dolores, along the Dolores River, to the Bradfield Ranch Road. If this access became unavailable, one of the alternates would be used.

Drill Pads. Each well would require construction of a drill pad by clearing and leveling about 1.9 acres of land, including a mudpit. Rehabilitation would be done after drilling, leaving a work area of about 150 ft. x 150 ft.

Electric Power System. Electric power would be supplied by 14 new substations, 2 new switching stations, and 86 miles of new 115 kV transmission lines. Operation of the project would require approximately

3.36 x 10⁸ kilowatt hours per year. Locations of the facilities would be done through cooperative procedures with the state and counties involved. Forest Service procedures and stipulations would be followed for facilities on National Forest lands. Access across the Dolores River would be immediately south of the Bradfield Ranch Road, as per Map F-1 in the DES.

Operation and Maintenance. Maintenance stations would be located at the central facilities. Access roads to the wells would be maintained.

Pipeline System

Construction.

Main CO₂ Pipeline. Ditching would use approved construction techniques. Existing buried utilities would be located by hand digging. The depth to the top of the pipe would vary from 1.5 to 4 feet, except in areas where deeper ditching would avoid future excavation due to conflict in land use. The pipeline would be buried in the riverbed at all river crossings; crossing of each water course would be done at the period of low flow for that river. Trenching, laying the pipe, coating, backfilling, and all other operations would generally be done at one time to minimize construction time and duration of the open trench. Contouring and revegetation would be conducted where required by surface management agencies or private land owners; agricultural lands may be contoured and left bare if timed properly for the farmer's planting. The pipeline would be bored under highways and railroad crossings.

Compressor Stations. A compressor station would be located on a 600 ft x 600 ft area near milepost 150 in Sandoval County, New Mexico. Three compressors of 2500 horsepower each would be used. No new generation facilities would be required for electricity to power the compressors; electricity would be supplied from existing powerlines within 6 miles of the compressor site.

Communications Network. Communications facilities would consist of a mobile radio system and 14 microwave repeater stations along, but not within, the pipeline right-of-way.

Electric Power System. A new switching station and substation would be required at the compressor station. Approximately 6 miles of new 115 kV transmission line would be installed. Land requirements would total 75 acres but only about 2 acres would be occupied by surface structures. The remaining 73 acres are for the transmission line right-of-way which would not require clearing of vegetation.

Operation and Maintenance. Aerial patrols of the rights-of-way would be done regularly. Valve maintenance would be done on the surface.

Emergency repairs to the pipeline or erosion control facilities would be done, if needed.

Oil Field

Facilities to distribute, inject, and recover CO₂ at the Denver Unit would include a terminal compressor, distribution lines, satellite stations, battery stations, gathering lines and compressors, gas-processing plant (including hydrocarbon and sulfur removal plants), and recompression facilities.

Construction. Initial construction of the described facilities would occur during 1981 and 1982. Approximately 1295 acres would be required during construction of which 1140 acres would be revegetated.

Operation and Maintenance. Operation and maintenance of the facilities at the Denver Unit would require about 120 employees daily. All of the materials pumped from the producing wells would either be reinjected or transported offsite.

ALTERNATIVES

General Alternatives

No other methods of enhanced recovery are available to the applicants with present technology that would provide recovery of similar volumes of oil from the Denver Unit. Other CO₂ sources are not available to the applicants in the quantity required. Other methods of CO₂ transport such as railroad tank cars and tank trucks were reviewed but were found not to be reasonably economical or environmentally acceptable.

Other Main Pipeline Routes

Pipeline routes following a more eastern route and a more southern route were considered but eliminated from further consideration due to the presence of rugged mountains, the presence of coal reserves and extensive archaeological sites, and the lack of existing pipeline rights-of-way. The Federal Land Policy and Management Act of 1976 requires following existing rights-of-way whenever possible.

Specific Alternatives

No-Action Alternative. The additional oil that would not be available under the no action alternative would be equal to 1.6×10^{15} Btu, or 0.4 percent of the average daily (1978) consumption of oil in the U.S.

Alternative Segments of Proposed Main CO₂ Pipeline (Map 8-1, DES)

Alternative A would leave the proposed right-of-way north of Albuquerque and parallel the proposed route (some five to ten miles to the north) for a distance of about 200 miles to the southeast.

This alternative would cause increased soil erosion, cost more because it is longer, have less visual impact than the proposal, and not cross the Cibola National Forest.

Alternative B would bend south in Sandoval County, paralleling the proposed route for 23 miles, and intercept the proposed route north of Albuquerque.

Impacts of the alternative include a decrease in visual impact over the proposal, avoidance of the Indian Reservation Lands, and is two miles longer than the proposal.

Alternative C would head south between the boundaries of the Zia and Santa Ana Pueblo Indian Reservations, then southeast for 14 miles, and intercept the proposed route north of Albuquerque.

Visual Resources would be impacted less and the route would be three miles longer.

Alternative Energy Supplies for the CO₂ Compressors. The CO₂ well field and the pipeline would be operated by electricity since no other energy source is reasonably available. The injection well field would operate by natural gas since natural gas is available from the San Andres Reservoir.

Alternative Doe Canyon East Lateral Gathering Lines. The Dolores River has been nominated to be included in the National Wild and Scenic River system. Due to the nomination, alternative river crossings for the Doe Canyon East Lateral CO₂ line are presented. The alternative crossings are all located in the vicinity of the Bradfield Ranch Bridge which is an established access across the river. It is considered consistent with the nomination of the river for possible wild and scenic designation and with the wording and intent of section 503 of the Federal Land Policy and Management Act of 1976 to designate the Bradfield Ranch Bridge as a location for crossing by utility rights-of-way. Such crossing would represent a utility corridor which would not compromise the nomination of the river segment, nor impair the multiple use planning goals for the river as set forth in the Sacred Mountain Management Framework Plan.

Alternative 1 crosses the river after descending the side of Narra-guinnep Canyon, ascends the south face of the canyon to a point a half mile south of the road, then travels west to join with the Doe Canyon West lateral line. Impacts during construction include disruption of traffic on the northeast side of the river on Bradfield Ranch Road, and

visual impacts from clearing the right-of-way. The entire pipeline would be buried in all three alternatives.

Alternative 2 crosses the river after following the road on the northeast side of the canyon more closely than Alternative 1. Environmental impacts of construction of this alternative would include disruption of traffic, possible loosening of the roadbed material, and a decrease in the visual resource.

Alternative 3 crosses the river after following the road (within the roadbed) on the northeast side of the canyon in its entirety. Environmental impacts include total disruption and rebuilding of the solid-rock roadbed, disruption of traffic, and disruption of the visual resource.

Of the three alternatives, Alternative 2 has less impacts than Alternative 3, and about the same as Alternative 1.

Alternative Construction Procedure for Alternate Doe Canyon East Lateral Gathering Line. The pipeline for Alternatives 1 and 2 would be placed on the surface between points A,B, and C rather than buried (Map F-12, DES). Impacts would be similar to the buried portion, except there would be a significant decrease in impacts to the visual resource and an increase in hazard of rupture of the pipe.

Alternative Transmission Line Corridors (Map F-13, DES). Alternative 1 would run south from the existing 115 kV powerline to the Doe Canyon East Central Facility. Impacts would not be significant since the right-of-way would not be cleared. The entire line would be within VRM Class IV.

Alternative 2 would connect the Doe Canyon East Central Facility with the Cahone substation in a line that is the shortest distance between the two facilities. A significant impact of this alternative would be the visual intrusion, exceeding both BLM and USFS limits established for the area. It would also compromise the "scenic" portion of the Dolores River, which has been nominated for Wild and Scenic River Designation.

Alternative 3 would follow the right-of-way for the proposed route of the dry CO₂ Lateral Pipe line from Doe Canyon East. The line would have the same impact as for Alternative 2.

Alternative Methods of Transmission Line Construction. Helicopters would be used for construction of the powerline. A large staging area would be required for storage of construction material and assembly of components. Noise would be an impact to aesthetics during construction. Less surface disturbance and visual impacts would occur.

Alternative Access Roads to the Doe Canyon Field. Alternative Access Road 1 would use the Bradfield Ranch Road from Highway 666 across the Dolores River at the Bradfield Ranch Bridge. The existing bridge would be replaced with a new bridge capable of supporting heavier loads and increased traffic volumes.

Alternative Access Road 2 would use existing unimproved roads through the San Juan National Forest from the east. Increased traffic and increased erosion would be the major impacts of this alternative. It is also undetermined if this access would be reasonably available all year.

IMPACTS AND ISSUES RESOLVED

There would be no significant impacts to the climate, air quality, geology, or topography in the vicinity of the proposed project.

Soil impacts would include a loss of about 109,000 tons of soil over the life of the project. This is not a significant amount in view of the length of the right-of-way and the narrow width disturbed in any one area. The long-term effects may be beneficial in some areas due to the increased cover anticipated from successful rehabilitation practices.

There would be no significant effects to surface water or ground water due to the proposed project or alternatives.

Construction and operation of the proposed project would result in a temporary loss of 6551 acres of vegetation. Reclamation and revegetation would be done on 6154 acres. The remaining 397 acres would be rehabilitated after project termination.

Wildlife habitat would be temporarily disturbed by the construction of the project or alternatives. A total of approximately 6500 acres of habitat would be altered or eliminated by the project or alternatives. Critical Habitat would be altered on 25 acres within the CO₂ well field, and on a small segment of the pipeline in north-western New Mexico. The temporary disturbance to this critical habitat is expected to have a negligible impact on wildlife. Impacts to fish and other aquatic organisms would not be significant. No significant impacts to threatened or endangered species are anticipated. The Section 7 Consultation process with the U.S. Fish and Wildlife Service has been initiated.

Impacts to cultural resources would be limited to buried sites encountered during construction that were not discovered during the preconstruction surveys. Increased access due to increased numbers of roads in the CO₂ well field may increase vandalism of some archaeological sites.

Project implementation would result in both short-term and long-term visual resource impacts. A short-term visual impact to all the lands affected by the proposed action would be created during construction due to clearing of vegetation. Rehabilitation measures would vary in their ability to mitigate visual effects. Agricultural lands would be rehabilitated successfully within one to two years. It may take five to fifteen years for successful rehabilitation of canyon walls. Some areas of steep slopes, shallow soils, or rough terrain may not be rehabilitated successfully; thus, some viewsheds may be altered over the life of the project. Construction would be highly visible in 25 locations along the pipeline. Visual resource impacts would be significant and long term in eight viewsheds.

The presence of surface disturbance and facilities may disturb some recreational users seeking solitude and aesthetic experience. No disturbance along the pipeline route to recreational users is anticipated. The nominated tract of the Dolores River that is pending designation as a Wild and Scenic River would be compromised by rights-of-way through the scenic portion under some components of the proposed action and alternatives. Specifically the proposed Doe Canyon East gathering line and transmission line Alternatives 2 and 3 would cross in the nominated portion of the Dolores River.

Construction and operation of the proposed action would result in 1018 acres of farmland being temporarily disturbed. Of this total, 73 acres would remain out of production for the 30-year life of the project. A total of 4010 AUM's in the affected environment would be lost over the life of the project. These impacts are considered insignificant.

Approximately 139 acres of potential timber lands would be lost over the life of the project. The timber that would be removed is not anticipated to be significant in terms of the loss of board feet of lumber.

The preliminary boundaries of a BLM Intensive Inventory Unit for wilderness study in Cross Canyon at the extreme northwest corner of the McElmo Dome CO₂ well field are very close to three wells and associated roads, pipelines, and electric transmission lines. If the Intensive Inventory Unit is chosen for designation as a Wilderness Study Area in September, 1980, the location of these components may be subject to review. If there is any conflict between the wells and associated facilities and wilderness, the matter would be resolved through agreement with Shell and Mobil after preparation of a site-specific Environmental Assessment.

There would be a withdrawal of 400 million cubic feet per day of CO₂ over the life of the project.

The project is consistent with federal and state land use plans. The Montezuma and Dolores county planning offices have indicated concern that Shell and Mobil would have to obtain permits for use of county roads and other facilities. The exact location of the CO₂ well field facilities and rights-of-way would be subject to county input as per the BLM-county cooperative agreements. Site-specific Environmental Assessments would be prepared for the location of some rights-of-way. If necessary, the larger components may require a public meeting as part of the Environmental Assessment process. Nothing in this document is meant to imply that each county would not be consulted and cooperated with consistent with each agency's authority.

Impacts to the transportation network would be minor and limited to the construction period.

The proposed project would cause a short-term increase in population, mostly in Cortez, Colorado where an increase in population of 9 percent or less for one year would occur. This would coincide with a projected increase in population due to construction of the Dolores Project and McPhee Dam and Reservoir. No significant adverse impacts are associated with socioeconomic.

ISSUES PENDING

The proposed project contains a dry CO₂ lateral gathering line from the Doe Canyon East well field that crosses the Dolores River 2 miles downstream and north of the Bradfield Ranch Bridge. This crossing would compromise the integrity of the section of the Dolores River nominated for designation under the Wild and Scenic Rivers Act; therefore, it is unacceptable even though it may result in the least amount of disturbance to the land of all the alternative crossings. It is consistent with the Wild and Scenic Rivers Act and the common corridors change in Section 503 of the Federal Land Policy and Management Act of 1976 to designate the Bradfield Ranch Bridge as a location for crossings. This designation would not compromise the nominated river segment, nor impair the multiple use planning goals for the river set forth in the Sacred Mountain Management Framework Plan. One of the alternative crossings at the Bradfield Ranch Bridge may be chosen for the crossing of the dry CO₂ lateral gathering line. Alternative 2 should have the least environmental impact.

New roads in the CO₂ well field may increase the ease of access to archaeological sites by illegal pot hunters. Archaeological sites which may not otherwise be easily accessible may be endangered by vandalism. Mitigation measures that were considered possible to lessen this identified secondary impact of the proposal include patrolling of the roads by BLM personnel and some form of access limitation to the general public.

Patrolling is a logical means of limiting illegal activities; however, it is subject to funding limitations. Access limitations to the general public have legal and practical constraints that would limit their effectiveness for the purpose of reducing vandalism.

Proposed access to the Doe Canyon East well field is by the existing country road from Dolores, along the Dolores River, to the Bradfield Ranch Road. This access may be blocked by the Dolores Project and McPhee Dam and Reservoir during construction. If the construction of the Doe Canyon East well field cannot be done prior to or after the dam construction, an alternate route would have to be chosen. Shell has agreed to participate with the responsible agencies in the construction of a new bridge across the river at the Bradfield Ranch. The new bridge would be able to handle the heavy loads and the increased volume of traffic. This access would then be available and it would be used in addition to the Dolores River road unless the latter becomes unavailable. Access would then have to be entirely by the Bradfield Ranch Road.

A number of residents in the Placitas area of New Mexico, north of Albuquerque, have asked the BLM to choose alternative pipeline Route A, which lies north of the proposed route by five miles, to reduce the possibility of a health hazard to the community in case of a leak. Even though the probability of an accident is extremely remote, and CO₂ is relatively harmless, the residents are still concerned about risks to their health and safety.

They also expressed objections based on visual intrusions of the right-of-way in the existing vegetation that would be visible in the area.

The impact analysis of the proposed action and alternatives identified significant impacts to the visual resource component of the environment that would be caused by construction and operation of the proposed action. These impacts would be unavoidable adverse consequences of initiating either the proposal or the alternatives (except "no action"). While some site-specific mitigation could be made by stipulations in the right-of-way permit, most visual impacts would last from several years to the life of the project. In this case, the selection of either the proposed action or alternatives (except "no action") would represent a trade-off between the energy that would be made available by the proposal, and the permanent alteration of some portion of the visual resource in the rights-of-way.

Both the State of Colorado and the Counties of Dolores and Montezuma Planning Offices have stated that portions of the proposed action may not be compatible with present land use plans for the area. Nowhere in the document was mention made of the county's permit authority. Should the decision be made to implement the project, the county governments would be contacted in advance of planned construction activities.

CONSULTATION AND COORDINATION

The DES was made available to the public for a 45-day review period on July 13, 1979. During the comment period public hearings were held at three locations, Roswell and Albuquerque, New Mexico and Cortez, Colorado. An afternoon and evening session were held at each location. A summary of these hearings is on pages 21 and 22.

Consultation and coordination is being done on Section 7 of the Endangered Species Act of 1973 as amended and Section 106 of the National Historic Preservation Act of 1966.

The decision document will be prepared following the filing of the FEIS. The Forest Service, as a cooperating agency, will be involved with its preparation. All agencies involved in preparation of the DES were consulted in the preparation of the FEIS.

AGENCIES AND ORGANIZATIONS FROM WHICH COMMENTS ON THE DRAFT ENVIRONMENTAL STATEMENT WERE REQUESTED

Agencies that responded are marked with an asterisk.

FEDERAL

*Advisory Council on Historic Preservation

Department of Agriculture

*Soil Conservation Service

*U.S. Forest Service

Department of Commerce

*Interstate Commerce Commission

Department of Defense

*Corps of Engineers

Department of Energy

*Department of Health, Education & Welfare

Department of Housing and Urban Development

Department of the Interior
*Bureau of Indian Affairs
*Bureau of Mines
*Bureau of Reclamation
*Fish and Wildlife Service
Heritage and Conservation
*National Park Service
*U.S. Geological Survey^a

Department of Labor
Occupational Safety and Health Administration

Department of Transportation

*Environmental Protection Agency

STATE

The State Clearing Houses for Colorado, New Mexico and Texas will coordinate comments from all interested state agencies in their respective states.

LOCAL

Colorado

Dolores County Commissioners
Montezuma County Commissioners
La Plata County Commissioners
Montelores Planning Commission

New Mexico

Bernalillo County Commissioners
Chaves County Commissioners
Guadalupe County Commissioners
Lea County Commissioners
Lincoln County Commissioners
McKinley County Commissioners
Sandoval County Commissioners
San Juan County Commissioners

^aComments provided by USGS are part of the internal review procedure.

Santa Fe County Commissioners
Torrance County Commissioners
San Juan Regional Planning Commission
Southeastern Economic Development District
Southern Rio Grande Council of Governments

Texas

Gaines County Commissioners Court
Yoakum County Commissioners Court
South Plains Association of Governments
Permian Basin Association of Governments

NON-GOVERNMENTAL ORGANIZATIONS

Central New Mexico Audubon Society
Colorado Association of Commerce and Industry
Colorado Four Wheel Drive Clubs, Incorporated
Colorado Open Space Council (COSC) Mining Workshop
Colorado Open Space Council
Colorado Parks and Recreation Society
Colorado Petroleum Association
Colorado River Water Conservation District
Colorado Ute Electric Association
Colorado Wildlife Association
Conservation Foundation
Defenders of Wildlife
Ecological Society
Environmental Action of Colorado
Environmental Affairs Committee, Colorado Bar Association
Environmental Defense Fund
Friends of the Earth
Izaak Walton League of America
National Council of Public Land Users
National Energy Law and Policy Institute
National Wildlife Federation
Natural Resources Defense Council
New Mexico Cattle Growers' Association
New Mexico Citizens for Clean Air and Water
New Mexico Conservation Coordination Council
The New Mexico Natural History Institute
New Mexico Wildlife Federation
School of American Research
Sierra Club
Soil Conservation Society of America
Trout Unlimited
Wilderness Society

Wildlife Management Institute
Wildlife Society

TRIBAL

Office of the Navajo Tribal Chairman
Southern Ute
Ute Mountain Ute
Northern Pueblo Agency
Santa Ana
Zia
San Felipe
Jamez

ERRATA

Listed below are additions and/or corrections in the Draft Environmental Statement (Volume 1). The changes are arranged in the same sequence as the DES (Volume 1). Changes bearing an asterisk are in response to an internal review; all other changes are in response to public comments.

<u>Page</u>	<u>Changes to Text of DES</u>
Contents*	Under " <u>page</u> " change, "1-38" to "1-36"; "1-47" to "1-45".
1-5	Map 1-1. The map should show the pipeline route passing to the north and east of the town of Mancos as is shown on the detailed Map F-3.
1-11*	Third paragraph, second, third, and fourth sentences. Change to read: "Installing and fully cementing the surface casing from the bottom to the surface completely isolates any freshwater aquifers from any hydrocarbon reservoirs encountered. Each hole would then be drilled about 50 feet beyond the CO ₂ -producing formation. The production casing which may consist of a liner would be cemented prior to completion from the bottom to about 500 feet above an easily erodible salt formation."
1-20*	Second paragraph, ninth sentence. Change to read "Trees and tall shrubs would be removed from pole sites on a case by case basis only as necessary for pole installation."
1-22*	Second paragraph, last sentence. Delete the word "storage". Add the following sentences to the end of the paragraph. "This area would be used for a storage area and also a work area to accommodate the equipment needed to construct the various crossings. The regular right-of-way would be included in this 200 x 200 ft. area."
1-29*	Item 17. Change to read: "Prior to initiating any ground disturbing activities related to this project, the applicant will: conduct a Class 1 cultural (archaeological and historical) resources inventory

Page

Changes to Text of DES (continued)

- 1-39*(Con't) for the entire project, regardless of ownership, and any on-site surveys as directed by BLM based on the outcome of the Class I survey and the recommendations of the State Historic Preservation Officer; evaluate all of the sites, buildings, districts and objects identified in the inventory using the National Register of Historic Places criteria; and carry out the cultural resource protection measures directed by the Authorized Officer with 36 CFR 800."
- 1-41 Under U.S. Forest Service, line 5, change "36 CFR 221" to "36 CFR 251".
- 1-43 Item 9. First sentence, delete "or landowner." Last sentence, change "landowner or managing agency" to "the Forest Service".
- 1-43 Add "15. BLM cultural resources stipulation 17 through 21 (pages 1-39 and 1-40) apply equally to National Forest Lands".
- 2-9 Table 2-3. The units for "Carbon monoxide" in the left column should be changed to "mg/m³".
- 2-51* First partial paragraph. Change last sentence to read "Hovenweep National Monument and Lowry Ruins are on the National Register."
- 3-4* Table 3-2. Well field construction (total) for 1983 should be "245".
- 3-58 Following the first complete paragraph, add an additional paragraph as follows:
- "The Dolores River has been nominated for designation as a Wild and Scenic River under the Wild And Scenic River Act. The proposed Doe Canyon East dry-CO₂ gathering line would cross the Dolores River in the nominated portion. This would compromise the nomination for a scenic river."

Page

Changes to Text of DES (continued)

3-58

Delete the first sentence under the heading Undeveloped Recreational Opportunities.

3-71*

Table 3-12. Totals for L, S, and O should be as follows:

	<u>1979</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>
L	21	135	165	100
S	29	225	240	135
O	35	90	65	10

5-5

Add the following paragraph at the end of the section titled "Recreation Resources":

"The proposed Doe Canyon East dry-CO₂ gathering line would cross a nominated portion of the Dolores River. This would compromise the river's nomination as a Wild and Scenic River".

6-6

First line, add "(Pacific Gas and Electric Company, 1978)" to the end of the first partial sentence.

6-6*

On lines 12, 30 and 33 change "asphixiant" to "asphyxiant".

6-6

Add the following discussion to the end of the section titled "Effects".

"Dispersion calculations have been performed to predict the impact of a rupture in the CO₂ pipeline that would allow major leakage of CO₂ to the atmosphere. The following premises were used in the dispersion modeling: 1) The rupture would result in a maximum CO₂ escape rate equivalent to the normal flow rate. 2) After one hour the flow would be shut down, and the only CO₂ emitted after that point in time would be the result of the depressuring of the 15-mile section of pipe containing the rupture. Dispersion calculation were only performed for the first hour when concentrations of CO₂ would be the highest. 3) The CO₂ leak rate during the depressuring would be at a lower rate than during the first hour, when the leak occurs under pumping pressure. 4) The CO₂ will be emitted as a vertical, free turbulent jet. The meteorological conditions shown in the following matrix were investigated.

6-6 (Con't)

Stability Class	Wind Speed (mph)	CO ₂ Exit Velocities (fps)	CO ₂ Flow Rates (MMSCFD ¹)
1. Neutral	11	150; 450, 874	400
2. Unstable	5	150, 450, 874	400
3. Stable	5	150, 450, 874	400
4. Stable	1	150 500 874	400
5. Neutral	11	150 874	770
6. Unstable	5	150 874	770
7. Stable	5	150 874	770
8. Stable	1	150, 500, 874	770

¹million standard cubic feet per day.

400 corresponds to a 20 inch Dia. pipe.

770 correspond to a 26 inch Dia. pipe.

Only for the stable stability class at a wind speed of 1 mile/hour, a CO₂ exit velocity at 150 ft/sec, and a CO₂ flow rate of 770 mm SCFD were ground-level concentrations as high as 3 percent predicted other than at the source itself (increased breathing rate is noticeable at 3 percent CO₂ concentration). At this meteorologic condition and with an exit velocity of 150 ft/sec, the plume bends over and impacts the ground resulting in ground-level concentrations of approximately 3 percent CO₂. Impaction of the plume centerline is predicted to occur 40 ft from the source and cover a circular area with a 20 ft radius. It is important to note that the 3 percent concentration is only predicted for the point at which the plume centerline impacts the ground and declines as the radius is traversed outward from this point. These dispersion calculations are available upon request.

It is acknowledged that some material would be ejected in the event of a pipeline rupture under a soil cover. The material would fall out in direct proportion to mass of individual particles. Larger particles would fall out first; fine particles may be carried further, especially if the wind was blowing at moderate or greater force. The likelihood that a rupture under a soil cover would eject sufficient material to be a hazard to human health or safety was considered to be so remote that detailed calculations and analyses were not conducted."

<u>Page</u>	<u>Changes to Text of DES (continued)</u>
6-8*	Table 6-1. Change the following headings across the top of the table to read: <p style="margin-left: 40px;">"7. Attain the Widest Range of Beneficial Uses of the Environment without Degradation</p> <p style="margin-left: 40px;">9. Attain the Widest Range of Beneficial Uses of the Environmental without Risk to Safety of People."</p>
8-1*	Last line, change "600,000" to "730,000".
8-2*	Third line, change "462" to "560". Fourth line, change "923" to "1,120". Sixth line, change "1400" to "1700". Eighth line, change "2700" to "3300". Second complete paragraph, first line, change "2700" to "3300". Same paragraph, fifth line, change "230,000" to "280,000". Same paragraph, seventh line, change "1000" to "1200" and "7500" to "9,000".
8-5	Map 8-1. The pipeline route is NE of Mancos as shown on F-3.
8-11	Replace last sentence with the following: "The environmental impacts of three alternate transmission line corridors were assessed and are discussed below. The impacts of the applicant's proposed route are included in the discussion of impacts from construction and operation of the well field (pages 3-1 to 3-82). Environmental review will be made for the site-specific locations of the power poles when additional data on pole locations become available prior to construction."
8-12	Under <u>Alternate Corridor 2</u> , third line, change "7.5" to "4".
8-14	Under " <u>Alternate Access Road 1</u> ", delete the last sentence and add the following: "The applicant has entered into an agreement with the Forest Service to help pay for a new bridge across the Dolores River at the location of the existing Bradfield Ranch Bridge. If implemented, the Bradfield Ranch Road would provide additional access

<u>Page</u>	<u>Changes to Text of DES (concluded)</u>
8-14 (con't)	to the Doe Canyon East Well Field. If the existing county road on the north side of the river is closed by construction of McPhee Dam, then Bradfield Ranch Road would be the only access to the Doe Canyon East Well Field."
G-3	Change "cencentration" to "concentration".
G-4*	In the line beginning "front", change "inclimatology" to "in climatology".
G-4*	Change "grusen" to "graben". Same line, change "crystal" to "crestal".
G-6	Add "vehicles" to end of last sentence on page.
R-6	After fifth reference add the following: "Pacific Gas and Electric Company. 1978. Application for Certification, Potrero Power Plant Unit No. 7."
R-11	Move last reference to USGS.
A-6	Table A-3, add "Total Sulphur" to beginning of column of SO ₂ values.
Map F-1	The legend symbols for substation and switching station should be reversed.
Map F-1	Add electric transmission line from McElmo Creek Central Facility east about 1-1/2 miles, then north to Main Central Facility.
Map F-3*	Change PRE to PRI.
Map F-12 and F-13	Move the location of the Doe Canyon West Central Facility about 1.5 miles to the southwest portion of Section 19 as shown correctly on Map F-1.
Map F-13	Add symbol (▲) indicating Cahone Substation, a point on existing powerline, approximately 2 miles east of Doe Canyon West Central Facility

RESPONSE TO COMMENTS OBTAINED AT PUBLIC HEARINGS

Six public hearings were held on the proposed project in three locations. These locations are Roswell and Albuquerque, New Mexico, and Cortez, Colorado. In each location two sessions were held, one at 1:00 pm and one at 7:00 pm. At the two sessions in Roswell and the 1:00 pm session in Albuquerque, no one testified.

At the 7:00 pm hearing in Albuquerque, Mr. Jerry Whetstone, resident of Placitas and representing the Sandoval Environmental Action Committee and the Village of Placitas, testified. Mr. Whetstone's concerns follow in summary comment form.

Comment: The DES lists the population of Placitas as 150. Mr. Whetstone stated that there were over 1500 people in the area.

Response: The 150 figure was the 1970 census for the village of Placitas. The 1500 figure referred to by Mr. Whetstone is an estimate by the Post Office for a larger area. This difference does not affect the impact analysis.

Comment: Pipeline construction would cause a visual impact due to increased vegetation clearing adjacent to the existing pipeline right-of-way.

Response: Clearing vegetation would create a visible strip that would remain visible until juniper trees become reestablished on the right-of-way. This impact would be compared to impacts from the Alternate A route to assess the most favorable route.

Comment: The pipeline route in the Placitas area would affect at least 12 private land owners, as well as the San Antonio de Las Huertas land grant and Las Huertas-La Java ditch system.

Response: The number of private land owners on the proposed route is approximately 435, and on Alternate A is approximately 394. Permission to cross their land must be obtained from the owners on either route.

Comment: A rupture or leak in the CO₂ pipeline in the Placitas area could affect the health and safety of the residents.

Response: CO₂ is not toxic or explosive and disperses rapidly. Dispersion calculations conducted as a result of Mr. Whetstone's comments indicated that only if a major break took place during calm wind conditions, the CO₂ concentration may reach 3 percent at a distance of 40 feet from the break. The noise from escaping CO₂ would be quite noticeable at this distance. A 3 percent

concentration would cause an increase in the breathing rate but would not be expected to cause any other ill effects. These studies indicate CO₂ concentrations greater than 3 percent would not occur beyond a 20-foot radius from the 40-foot point.

At the Cortez, Colorado hearing at 1:00 pm there were several speakers including Mr. David M. Denton, Administrative Assistant for Montezuma and Dolores counties. Mr. Denton's comments are discussed in the Issues Pending Section. The other speakers were: Tim Sweeny, representing the Soil Conservation Service; Thelma Bement, an area rancher; and Paul Folse, Dolores County Extension Director. These three people all expressed concern about the importance of revegetating the pipeline right-of-way.

Response: The DES states that the right-of-way will not be maintained to provide permanent access. BLM has stated in the DES that the right-of-way would be reseeded on federal lands. Reclamation procedures on private lands would be at the discretion of the land owner.

At the 7:00 pm meeting the only speaker was Mr. Jerry Fetterman, resident of the area. Mr. Fetterman's concerns are summarized as follows:

Concern: Impact of noise from the operation of wells and central facilities on local residents.

Response: During operation of the wells a glycol dehydration system will be in operation at the central facility. This is gas-fired and it is doubtful the noise could be heard at a quarter-mile distance. The compressors at the central facilities will be enclosed in buildings to reduce the noise.

Concern: Will road traffic be controlled?

Response: During construction and operation, traffic associated with the project will be held to a minimum consistent with safe practices. On the public roads traffic can not be controlled by BLM or the applicant.

RESPONSES TO WRITTEN COMMENTS

Several comments received pertain to details of the proposed action rather than the analysis of the impacts of the proposed action. These comments are important and will be helpful in the decision process after the final environmental impact statement is published. Since these comments do not question the analysis of the proposed action, we have not specifically responded to them in this final environmental impact statement.

<u>Letter Number</u>	<u>Agency, Organization, or Individual</u>
1	South Plains Association of Governments
2	Department of Housing and Urban Development
3	Soil Conservation Service
4	Bureau of Mines
5	Lawrence Livermore Laboratory
6	Department of the Army, Corps of Engineers
7	Russel Martin
8	Darrell Sever
9	Advisory Council on Historic Preservation
10	Bureau of Reclamation
11	U.S. Department of Health, Education, and Welfare, Public Health Service
12	USDA Forest Service, Rocky Mountain Region
13	National Park Service
14	The Dolores Star
15	Placitas Fire Brigade
16	SEAC
17	Josephine Proett
18	J.M. Soden
19	Joe Britton
20	Kathryn Mutz and Gerald K. Jacob
21	Department of Local Affairs, Colorado Division of Planning
22	Colorado State Department of Highways
23	Colorado Department of Health
24	Division of Water Resources
25	Colorado Historical Society
26	Colorado Division of Mines
27	Department of Local Affairs, Colorado Division of Planning
28	Office of the Governor, State of Texas
29	Texas Department of Water Resources
30	U.S. Fish and Wildlife Service
31	National Park Service, Rocky Mountain Regional Office
32	Environmental Protection Agency, Region VI



GA 79-116

South Plains Association of Governments

September 12, 1979

Arthur W. Zimmerman
State Director
Bureau of Land Management
P.O. Box 1449
Santa Fe, New Mexico 87501

SUBJECT: SA1 TX 90702012 - Environmental Statement: Shell
D11 Company Proposed CO₂ Project

Dear Mr. Zimmerman:

On Tuesday, September 11, 1979, the South Plains Association of Governments' Board of Directors reviewed and COMMENTED FAVORABLY on the above-referenced application, with one specific recommendation. This comment was that the applicant "reseed the native grass on range land upon its disturbance." Other adverse environmental problems were not noted in the review process. Otherwise, the proposed activity was found to be favorably received by affected regional officials.

You are to be commended on your application endeavors and a job well-done. If we may be of further assistance, do not hesitate to contact this office.

Sincerely,

Jerry D. Kasstevens
Jerry D. Kasstevens
Executive Director

JDC/hr

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MELVIN CARPENTER
Mayor Pro Tem
City of Pampa

1ST VICE PRESIDENT
ALAN RIGBY
Mayor Pro Tem
City of Lubbock

2ND VICE PRESIDENT
HENRY BECK
County Judge
Hale County

3RD VICE PRESIDENT
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County Judge
DeSoto County

4TH VICE PRESIDENT
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City of Lubbock

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JAMES M. AND LANCASTER
County Commissioner
Lubbock County

TREASURER
I.C. WILLIAMS, JR.
Mayor Pro Tem
City of Brownsville

EX OFFICIO MEMBER
GLENN W. TUCKER
County Judge
Lubbock County



STING EXECUTIVE DIRECTOR
GLENNIA ROBINSON

1709 - 26th Street
Lubbock, Texas 79411
806-762-8721

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DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
FT. WORTH REGIONAL OFFICE
1100 COMMERCE STREET
DALLAS, TEXAS 75202 NEW ZIP CODE 75242

REGION VI

IN REPLY REFER TO:

September 14, 1979

State Director
New Mexico State Office
Bureau of Land Management
United States Department of the Interior
P.O. Box 1449
Santa Fe, New Mexico 87501

Dear Sir:

The Draft Environmental Impact Statement for the CO₂ Project -
Masson Field/Denver Unit has been reviewed in the Department
of Housing and Urban Development's Dallas Area and Regional
Offices, and it has been determined that this Department will
not have comments on the subject Draft EIS.

Sincerely,

Victor J. Hancock
Victor J. Hancock
Environmental Clearance Officer

Date Routed:

SEP 19 1979
1 SD *[initials]*
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AREA OFFICES

DALLAS, TEXAS - LITTLE ROCK, ARKANSAS - NEW ORLEANS, LOUISIANA - OKLAHOMA CITY, OKLAHOMA - SAN ANTONIO, TEXAS



United States
Department of
Agriculture

Soil
Conservation
Service

Bux 2007
Albuquerque, NM
87103

Data Routed:

JUL 25 1970

July 20, 1979

Mr. Arthur W. Zimmerman
U. S. Bureau of Land Management
P. O. Box 1449
Santa Fe, NM 87501

Dear Mr. Zimmerman:

We have received and reviewed the draft Environmental Statement, "CO₂ Project, Wason Field/Denver Unit" dated July 13, 1979.

- (1) Our major comment pertains to the possibility of not revegetating the pipeline right-of-way where it crosses private lands. The lands affected may be as much as 201 miles, involving 2,500 acres (Table 1-2).

The description of pipeline construction techniques on page 1-29 indicates that the decision of whether to revegetate, particularly seeding, would be that of the landowner. Also, on page 3-31, it is stated that erosion control will rely on natural vegetative reestablishment, unless "management agencies (on federal lands) or private landowners required seeding as a reclamation procedure."

We do not feel that the on-site and off-site erosion impacts of right-of-way disturbances will be adequately treated without a complete revegetation program including seeding and possibly mulching. We recommend that the final environmental statement contain a section describing complete revegetation program strategies. We also recommend that the statement be changed to indicate that all lands to be disturbed by the project, well fields, and pipelines will be revegetated to the extent that erosion is controlled during the season after construction ceases.

Thank you for the opportunity of reviewing the statement.

Sincerely,

A. W. Hamelstrom
State Conservationist

E. W. Mearns, for
A. W. Hamelstrom
State Conservationist

$$\frac{1}{2} \text{ CF}_4$$



United States Department of the Interior

BUREAU OF MINES

BUILDING 20, DENVER FEDERAL CENTER
DENVER, COLORADO 80225
Intermountain Field Operations Center

Office of
Chief

August 9, 1979

Date Rec'd:

Aug 15 1979

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Memorandum

To: Arthur W. Zimmerman, State Director, Bureau of Land Management,
P.O. Box 1449, Santa Fe, N. Mex. 87501 (Attn. 911)

From: Chief, Intermountain Field Operations Center

Subject: Draft environmental statement, CO₂ Project, Wassen Field/Denver
Unit

Personnel of the Intermountain Field Operations Center, Bureau of Mines, have reviewed the subject DES, prepared by the Bureau of Land Management, for possible conflict between the proposed project and other mineral resources or other elements of the private mineral sector as suggested in your recent undated notice of public hearings.

The document pertains to a proposal to develop two well fields in Colorado for the production of CO₂, and to construct an interstate 20-inch pipeline between the CO₂ fields in southwestern Colorado and the Wassen oilfield near Denver City in Yuskas County, Texas. The CO₂ would be used in recovering 280 million barrels of oil from existing wells in the Wassen field.

- (2) Known mineral resources of the CO₂ field areas include coal, uranium, salt, oil and gas, and sand and gravel. The document (p. 2-61) recognizes the existence of coal, uranium, and salt, stating that neither the uranium nor coal are now commercial and that no plans are known for salt extraction. Oil, gas, and sand and gravel are not mentioned. Although development of the CO₂ wells should not alter the availability of oil and gas in the area, it is possible that a conflict may occur between CO₂ gathering lines and oil and gas gathering lines. Moreover, the document does not indicate that the main CO₂ pipeline would cross several crude oil and product pipelines in New Mexico and Texas. Among such pipelines are:

Company	Size (inches)	State	Type
Phillips	12	Texas	crude
Anoco	16 (2 lines)	Texas	crude
West Emerald	6	New Mexico	products
Mid America	4	New Mexico	products

- (2) The extraction of CO₂ will not prevent recovery of these other mineral resources nor impact them.

- (3) There are numerous pipelines that will be crossed by the proposed CO₂ pipeline. As stated on page 1-60 permits, and other users of public lands would be notified, including operators of other pipelines.



It also is possible that a MAPCO 8-inch products pipeline and a Texas-New Mexico 16-inch crude pipeline may conflict with the main CO₂ line, although they appear to parallel the proposed CO₂ line rather than to cross it. We suggest that subsequent versions of the BES list oil and gas among the mineral resources in or near the proposed CO₂ well fields and discuss plans for handling conflicts between pipelines should they occur.

This project appears to be in agreement with the President's stated intentions concerning energy development and production. We have no other objections to the BES as written.


Joseph B. Smith

cc: Regional Environmental Officer
Southwest Region, Albuquerque



LAWRENCE LIVERMORE LABORATORY

Aug. 17, 1979

Date Routed:
AUG 22 1979

Arthur W. Zimmerman
State Director, Bureau of Land Management
New Mexico State Office
P.O. Box 1449
Santa Fe, N.M. 87501

Dear Sir:

The following comments on the DES for the CO₂ Project: Masson
Field/Denver Unit are in response to your letter of July 13, 1979.

1. SD *[initials]*
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- (4) Chapter 2, p. 15 Non-proprietary information on the stratigraphy and structure of the oil field should be included.
- p. 19 Oil field soils should be mentioned.
- p. 30 Oil field hydrology should be given in greater detail - where are the aquifers, how saline are they, etc.
- p. 81 Information on other mineral resources in the area of the oil field should be given.
- p. 82 Information on oil field transportation network should be included.
- p. 107 Under "Future Environment", some mention of the CO₂ well field and the oil field should be made under all categories.
- (5) Chapter 3, General comment: Noise levels generated by construction activities should be estimated and impacts on people living near construction sites should be discussed.
- (4) p. 25 More information is needed on the hydrology of the oil field to better assess the adequacy of the conclusion regarding operating effects on groundwater.
- (6) p. 19-25 More attention should be paid to preservation of groundwater quality in drilling areas. Special mitigating measures should be considered with respect to mud pit construction to insure against excessive erosion and effluent runoff into surface water sources.

- (4) The items mentioned will not be impacted by this project and therefore, are not discussed in this environmental impact statement.
- (5) Noise during construction is estimated to be between 80 and 90 dB (A) at 50 feet from operating heavy equipment. This would only be during the day, except for drilling operations. There would be intermittent blasting along the pipeline route during construction. Local residents would be notified if blasting would be required in their vicinity.
- (6) This is discussed on page 1-9.

- (7) Chapter 3 cont.

p. 64-66

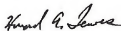
Project impact on wilderness areas should be reevaluated in light of the RARE II recommendations made by the Department of Agriculture. All efforts should be made to avoid disruption of roadless areas due to the increasing demand for wilderness areas within the United States.

- (5) Chapter 5, General comment: Impact of noise from construction activities should be mentioned.

- (8) Chapter 8, General comment: Reference should be made of the development of alternative energy sources. Since many studies of the relative environmental consequences of developing various energy resources have been made, this level of alternative needs only to be mentioned and referenced.

If you have any questions regarding our comments, please do not hesitate to contact me (FTS phone 532-6464).

Yours truly,



Howard A. Tewes,
Leader, Environmental Studies Group
Earth Sciences Division

cc: R.N. Shock.
L.L. Schwartz
D.O. Emerson

HAT:lvc

- (7) There are no RARE II areas impacted by this project. The inventory for RLM roadless areas will be complete prior to construction. Any areas identified will be handled as required by law.

- (8) The proposed project is enhanced oil recovery from the Wanson field; development of other energy sources is a separate decision and not foreclosed by this action.



DEPARTMENT OF THE ARMY
ALBUQUERQUE DISTRICT CORPS OF ENGINEERS
P. O. BOX 1580
ALBUQUERQUE NEW MEXICO 87103

SWAED-EF

17 August 1979

AUG 25 1979

Mr. Arthur W. Zimmerman
State Director, New Mexico State Office
Bureau of Land Management
P.O. Box 1449
Santa Fe, New Mexico 87501

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Dear Mr. Zimmerman:

I have reviewed the draft Environmental Statement for Shell Oil Company's
CO₂ Project, Wasson Field/Denver Unit; dated July 13, 1979.

The statement appears to be adequate as regards to the overall purview of
the Corps of Engineers, including Section 404 of the Clean Water Act (33
USC1344).

Sincerely,

JASPER H. COMBES, P.E.
Chief, Engineering Division

RUSSELL MARTIN

15201 County Road 26
Durham, Colorado 81329
303 882 4775

Date Routed
AUG 22 1979

August 22, 1979

Arthur W. Zimmerman
State Director
New Mexico State Office
Bureau of Land Management
P.O. Box 1649
Santa Fe, New Mexico 87501

Re: CO₂ Project Draft Environmental Statement

Dear Mr. Zimmerman:

- (9) My first comment on the draft Environmental Statement of the proposed CO₂ project center on questions raised in "Proposed Action", Chapter 1: Description of the Proposal and in Chapter 7: Irreversible and Irrecoverable Commitments. Specifically, I feel the statement fails to place in perspective the relationship between the project's estimated net energy gain and the immense scope of its construction and utilization. Although the statement acknowledges that the newly recovered oil would amount to about 0.1 percent of the current domestic crude oil production and about 0.4 percent of the daily imported crude, it fails to make the subsequent simple statement that the project would provide at best only about 0.1 percent of the current daily available crude for U.S. refineries. That amount, when considered in the context of a likely diminishing demand for oil-based energy generation over the next 30 years (i.e. increasing reliance on coal, solar and nuclear technologies) would seem to raise serious questions about whether the cumulative environmental impacts of a project of this magnitude can be justified on the basis of an energy return that will at best be minimal now and possibly unneeded before the scheduled end of the project. Surely the question of whether the proposing companies' money, time and expertise would be better directed toward exploration for major new oil deposits and, concurrently, the perfection of reasonable resource technologies should be addressed.
- (10) My next comment centers on "Well Field Electric Power System" in Chapter 1 and "Alternate Transmission Line Corridors", Chapter 8. I feel the statement does not sufficiently address the erosion, vegetative, agricultural and visual impacts of the proposed 115kv transmission lines in the CO₂ field and Montezuma Valley areas. That issue is only slightly touched upon and appears glaringly inadequate when compared with the careful considerations of the proposed and alternate pipelines and their associated impacts. Much work remains to be done, I believe, on investigating means of mitigating the major disruptive impacts of the lines on the piñon-juniper forests and the agricultural lands of the valley. Consideration should be given to, whenever at all possible, combining the transmission lines (whether overhead or buried) in the various pipeline and/or road rights-of-way, rather than establishing separate power line rights-of-way that would needlessly create additional damage and devaluation of the lands.

- (9) This comment addresses the economics of energy development and does not address the adequacy of the environmental analysis.

- (10) As stated on page 1-16 the power lines to the wells would be in the wet CO₂ gathering line trench. Impacts of the above ground transmission lines would be minor since vegetation would be cleared only at the pole sites and not along the right-of-way.

RUSSELL MARTIN

15201 County Road 25
Dorcas, Colorado 81323
303-682-4775

page 2, Arthur W. Zimmerman

- (11) Finally, I find no mention in the draft document of dismantling and reclamation plans following the conclusion of the project. Surely the applicants' intentions and the Bureau's requirements regarding that post-project phase should be included in the Final Environmental Statement.

Thank you for your consideration.

Sincerely,



Russell Martin

- (11) All above ground facilities would be dismantled and removed at project termination. The disturbed areas would be revegetated. At the present time there are no plans to recover the pipe at the end of the project.

35

Date Routed:
AUG 24 1979

+ SD *[initials]*

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Other _____
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2. GENERAL _____

- (12) The notice said an alternate site or route is being considered 5 to 10 miles north of the route through Las Huertas Canyon. Please use the alternate. We have worked 8 years to get to the point we are now - which is building a home for our family on our beautiful land. Right now there are no power lines or other obstructions to our beautiful view which includes a stream running part of the year. We will be heart-broken if a 50' wide strip of land is denuded down the middle of the canyon.
- (13) Las Huertas is also the site of Coronado's camp when he traveled up the creek to escape the smallpox

- (12) Both the proposed route and the alternative are being considered. This statement, an analysis of the environmental impacts, and other information will be the basis for the final decision.

- (13) The proposed route parallels an existing pipeline route in this area.

in his Bernalillo Camp.
Thus historically and
environmentally the
Las Huertas Canyon should
be preserved without
the disturbance of a 50'
strip cleared for a
Co pipeline.

Please give the alternate
route every consideration.

Thank you.

Sincerely,

The Levers

Barrett, Ann & Pamela

cc Senator Domenici & Schmitt
Rep Lujan

Advisory
Council On
Historic
Preservation

1322 K Street NW
Washington D.C.
20005

Reply to: P. O. Box 25085
Denver, Colorado 80225

August 24, 1979

State Director
Bureau of Land Management
New Mexico State Office
P. O. Box 1449
Santa Fe, New Mexico 87501

Dear Sir:

- (14) On July 13, 1979, the Council received the Bureau of Land Management's request for comments on the draft environmental statement (DES) for the Shell Oil Company's proposed G2 project in the state of Colorado, New Mexico and Texas. Pursuant to its responsibilities under Section 102(2)(C) of the National Environmental Policy Act of 1969, the Council has determined that this DES does not demonstrate compliance with Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. Sec. 470f, as amended, 50 Stat. 1320) in accordance with the regulations, "Protection of Historic and Cultural Properties" (36 CFR Part 800), with regard to this proposal. However, it appears that the BLM recognizes its responsibilities pursuant to Section 106, as amended, and will carry them out to the future.

BLM is reminded that if future actions implementing this proposal will have any effect on cultural properties not previously identified which may be eligible for or are included in the National Register of Historic Places, it is required to afford the Council an opportunity to comment on those actions in accordance with its regulations.

Should this proposal be approved, the Council looks forward to working with the BLM in accordance with the regulations as appropriate.

Date Routed:

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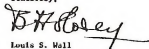
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- (14) BLM is proceeding with its responsibilities pursuant to section 106.

Page 2
State Director - Bureau
of Land Management
CD; Project
August 24, 1979

Should you have any questions or require assistance in this matter, please contact Mrs. Jana King of the Council staff at P. O. Box 25085, Denver, Colorado 80225 or at (303) 234-4946, an FTS number.

Sincerely,



Louis S. Well
Chief, Western Division
of Project Review

Welling



BRIFLY
REFER TO: 150
120.1

United States Department of the Interior

BUREAU OF RECLAMATION

SOUTHWEST REGION
HERRING PLAZA BOX H-4377
AMARILLO, TEXAS 79101

AUG 23 1979

Date Sent: d.

AUG 27 1979

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Memorandum

To: State Director, Bureau of Land Management,
Santa Fe, NM

From: ~~1101~~ Regional Director

Subject: Draft Environmental Statement CO₂ Project (ER 79/37)

The Bureau of Reclamation has reviewed the subject draft environmental statement (DES) and finds the descriptions of the existing environment and the expected impacts thereon to be generally adequate.

- (15) We note in the sections describing the expected effects on vegetation that there is no mention as to the need or anticipated use of herbicides for pipeline rights-of-way or property easement maintenance. Therefore, it is our opinion that this topic should be addressed in the final environmental statement. Discussions relating to the potential use of herbicides should include:

1. The approximate loss of soil in the areas of herbicidal application due to water and wind erosion.
2. As a result of 1, the expected alteration to surface water drainage patterns at the sites of herbicidal application.
3. The potential impact of herbicidal use on aquifer recharge areas.
4. The amount of herbicide that could be introduced into watercourses due to runoff.

The opportunity to review the DES is appreciated.

A. Hawks

cc: Commissioner, Attn: 150

- (15) As stated on page 1-38 and 1-43 in the DES there is no anticipated use of herbicides to remove vegetation.



DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
CENTER FOR DISEASE CONTROL
ATLANTA, GEORGIA 30333

Date Rec'd.

AUG 27 1979

August 22, 1979

State Director (911)
U.S. Department of the Interior
Bureau of Land Management
New Mexico State Office
P.O. Box 1449
Santa Fe, New Mexico 87501

Dear Sir:

We have reviewed the Draft Environmental Statement (DES) for CO₂ Project, Wagon Field/Denver Unit. We are responding on behalf of the Public Health Service and are offering the following comments for your use in preparing the final environmental statement.

We understand that the proposed action is an application of rights-of-way for a pipeline and related facilities to transport CO₂ from southwest Colorado to Texas. While the DES indicates that the proposal would have minor adverse environmental effects, we do have serious concerns about potential pipeline accidents and the health risks to people residing near the main CO₂ pipeline.

Accidents

According to the DES the four conditions under which leaking CO₂ gas would become a hazard are:

1. Periods of no wind in stable, cold, dry air.
2. An area of relatively high population of people and animals.
3. Low lying land, such as river bottoms.
4. Massive leakage of CO₂ from complete ruptures.

(16) It is further discussed that if a major leak occurred and greater than 90 percent of CO₂ were to envelope a person, "death by asphyxiation could occur before that person could leave the area." Should a rupture occur, as much as 89 million standard cubic feet of CO₂ could be discharged to the atmosphere. Depending on atmospheric conditions--assuming worst case conditions--the area affected by the CO₂ could be quite extensive. For this reason, we believe the DES should elaborate on the size of the potential hazard area along the pipeline and the potential hazard to people residing in low areas near the pipeline.

(16) This material has been added to page 6-6, see Errata section.

- (16) Considering the estimate of "13.5 accidents over the life of the project" or 2.2 accidents/year, precautionary measures to reduce potential health hazards seem appropriate. The necessity of installing special shutoff devices to safeguard potentially hazardous areas (i.e. populated and low areas near the pipeline) should be discussed.
- Is the estimate of .000945 accidents per mile equally representative of all those areas along the pipeline corridor or are certain pipeline sections more prone to accidents? While no "major leaks" have occurred with the existing CO₂ pipelines, SACRO, have any "accidents" ever occurred in the past with this or other CO₂ pipelines?

The occupational health aspects of maintaining the project facilities should also be addressed.

(17) Sanitary Facilities

Onsite sanitary facilities, temporary and permanent, should be described for construction and operation activities.

(18) Water Supply

According to the DES, aquifer cross-contamination in the well field "could conceivably result." The potential that existing or future local water supplies, private and community, could be adversely affected from the occurrence of any cross-contamination should be explained. The extent of the possible impact upon such water supplies should also be addressed.

(19) Erosion

Approximately 6,551 acres of vegetation in the CO₂ well field, the CO₂ pipeline corridor and facilities, and the oil field will be disturbed by this proposal. We are not convinced that the proposed mitigation measures will sufficiently protect the disturbed areas from wind or water erosion, nor the local streams from increased sedimentation. Satisfactory reclamation of disturbed areas should not be dependent on whether it is required "by landowners or the appropriate surface management agency." Instead, it should be made an integral part of the proposal. Reclamation of disturbed areas having highly erodible soils should incorporate short-term and long-term erosion control measures including: temporary berms, retention basins, ground shaping, topsoil replacement, revegetation (sprigs, sod or seed), adequate soil stabilization or use of mulch coverings, i.e., old hay, straw, wood chips, etc.

(17) Sanitary facilities will meet local requirements.

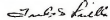
(18) The casing will be cemented to prevent cross contamination. Water in the area exceeds the recommended limits for TDS and is not currently being used.

(19) See Comment number 1.

Page 3 - State Director (911)

Thank you for the opportunity to review this draft statement. We would appreciate receiving two copies of the final statement when it becomes available.

Sincerely yours,



Frank S. Lisella, Ph.D.
Chief, Environmental Affairs Group
Environmental Health Services Division
Bureau of State Services

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE

Rocky Mountain Region
11177 West Eighth Avenue, Box 25127
Lakewood, Colorado 80226

ROUTED:
AUG 27 1979

1950

August 22, 1979



Note last night →
Mr. Arthur W. Zimmerman
Bureau of Land Management
New Mexico State Office
P. O. Box 1449
Santa Fe, New Mexico 87501

Dear Mr. Zimmerman:

We have reviewed the Draft Environmental Statement for the CO2 Project and have the following comments:

General Comments

This statement is difficult to read and trace the various actions of the proposed project. The OES appears to be a justification of the project and not a means of assessing the environmental impacts.

- (20) We cannot determine how the pipeline crosses the river. If it is suspended, the impact is mostly visual and probably of little consequence. If the crossing is on the river bed, the impact may be both visual and physical. If there is any chance that a boat or raft will come into physical contact with the pipeline, there is danger to the boater. This should be clarified.

Specific Comments

- (21) Page 1-8, second paragraph: Discusses the proposed access to be by the existing County Road from Olores, along the Olores River. This access will be closed during McPhee Dam Construction.
- (22) Page 1-14, fifth paragraph: Discusses that each well is expected to produce from 150 to 200 gallons of free water per day. If there are 40 wells on National Forest land, this could amount from 6,000 to 8,000 gallons of water per day. What is the plan for disposal? If this water is pure it could be used as stockwater developments or dust abatement on roads.
- (23) Page 1-15, Figure 1-4: The typical well facility layout should be redesigned to take less land out of production. The "U" shape layout should be redesigned and all lines buried.

- (20) All river crossing will be buried as shown on page 1-28 (Fig. 1-11) of the OES.

- (21) This material has been added to pages 8-14, see Errata section.

- (22) The water will not be pure. Disposal will be done as explained in the OES page 1-11.

- (23) These are general drawings. Actual configuration will vary depending on location. The pipeline will be buried whenever possible.

- (24) Page 1-16, Central facilities, third paragraph: States, "Each site would be cleared, leveled, compacted, and graveled to support the permanent facilities and heavy loads." We disagree that the central facility sites be "cleared, level, compacted. . . ." As we have maintained in the past, working with BLM and their consultant, the sites should be designed to fit the landscape, not the landscape altered to fit their sites. The equipment needed in the central facilities can be designed to blend with the terrain.
- (25) Page 1-20, Wall Field Electric Power System. In that paragraph, it states in part, "In some areas of very rough terrain or dense vegetation. . . and tower sites. An area of about 50 x 100 feet is required. . . . Most trees and shrubs would be cleared from the pole site. . . ." We feel those items mentioned will be determined on the ground based on vegetative cover, type of terrain, and available access to each structure site. Also, that information will be included in the applicants construction and landscape plan. Most sites will not be cleared of the vegetation, nor an assembly pad be constructed to build the transmission line on National Forest System lands.
- (26) Page 1-22, Pipeline, second paragraph, last sentence: States, "A 200 x 200 foot shortage area would be required on both sides of river crossings, highway crossings, and railroad crossings." We cannot see or understand the need for these large storage areas for each crossing. This needs to be clarified.
- (27) Page 1-39, Stipulation Number 17: States in part, ". . . The applicant will: . . . conduct a cultural (archaeological and historical) . . . of the total area of ground disturbance regardless of ownership; . . . and carry out the cultural resource protection measures directed by the Authorized Officer with 36 CFR 800." We do not have any authority to carry out cultural resource protection measures on private lands. Does BLM have this authority? This should be clarified.
- (28) Page 1-43, Stipulation Number 9: This stipulation needs to be reworded. First sentence remove "or landowner." Last sentence, remove "landowner or managing agency" and insert "the Forest Service."
- (29) Page 1-41, third paragraph: Incorrect citation of 36 CFR 221. Should read 36 CFR 251.
- (30) Page 1-43, tenth paragraph: Add stipulation number 15 "BLM cultural resources stipulations 17 through 21 (pages 1-39 and 1-40) apply equally to National Forest lands." (See comment on page 1-39)
- (31) Chapter 2: We recommend that the description be revised to more completely reflect the values of the river.
- (24) Central facilities on Forest Service land will be designed with Forest Service agreement.
- (25) This material has been added to page 1-20, see Errata section.
- (26) This material has been added to page 1-22, see Errata section.
- (27) This material has been added to page 1-39, see Errata section.
- (28) This material has been added to page 1-43, see Errata section.
- (29) This material has been added to page 1-41, see Errata section.
- (30) This material has been added to page 1-43, see Errata section.
- (31) This material has been added to pages 3-58 and 5-5, see Errata section.

- (31) Pages 2-73 and 2-75: Revise to read, "The Doe Canyon Field, a dry CO2 pipeline, electric power lines, and an access road affect the Bradfield Ranch-Disappointment Creek segment of the river. This segment is described as follows: The area has seasonal outstanding opportunities for white water floating in primitive environment. Contains reaches with nearly continuous series of river's most challenging and technically difficult rapids. Bradfield Ranch is a primary entry point for commercial and private users. The shoreline has striking contrasts of lush vegetation and colorful geologic formation in deep and impressive v-shaped canyon. (Dolores River Wild and Scenic River Study Report, 1976.) The segment affected by the proposed CO2 Project has been recommended for designation as a National Scenic River Area by the President; action is anticipated in the current Congressional session."
- (32) Chapter 3, which deals with impacts of the CO2 Project, is devoid of discussion of the effects on the proposed Scenic River Area. We believe that the pipeline, power line, and road crossings will affect the visual recreation qualities of the river. The visual effects, in our estimation, will be slight, but they should be specifically addressed. We believe that the proposed access road crosses the river at the Bradfield Ranch. Improvement of this road will undoubtedly lead to increased use of the river by commercial and private floaters. This should be addressed; the Dolores Report suggests that the river has a maximum carrying capacity for users. Improved access combined with designation as a National Wild and Scenic River will cause this capacity to be achieved much earlier than forecast in our report.
- (33) Page 3-31, first paragraph: The wording is vague. It implies that not all disturbed areas will be revegetated. Recommend second sentence be reworded to say, "Surface management agencies will require revegetation on all disturbed areas except those to be occupied by facilities, as a reclamation procedure. Disturbed areas will be replanted with desirable grasses and forbs. There will also be invading species characteristic of initial successional stages."
- (34) Page 3-47, second paragraph: Mentions that the VAC (Visual Absorption Capability) was used with the BLM's Visual Resource Management System to determine the anticipated impacts of the proposed project. The section from this page (3-47) to 3-57 makes no further comment on VAC.
- (35) Pages 3-47 - 3-57: The discussion expresses quite graphically the visual impacts caused by the activity, but very little indication of the utilization of the system (VRM) to minimize the visual impacts in planning the project. This is a major weakness of the proposal if this is the case.
- One case for example might be in a CO2 line crossing a major travelway. Instead of crossing at a right (90 degree) angle and causing an obvious visual impact as shown in Figure 3-6, angling the pipeline would lessen the impact, as illustrated in the attached sketch.
- (32) The pipeline crossing the Dolores River is discussed on page 3-47 of the DES. The visual effects of the power line crossing is discussed on page 3-48 of the DES. The road already exists to the river. The bridge will be critical to river rafters since they cross it to launch.
- (33) See Comment number 1.
- (34) On page C-7 and C-8 the Forest Service and BLM visual systems are compared.
- (35) See Item 2 page 4-1 of the DES.

Other sketches are enclosed based on landscape management principles, that give basic direction in location of the gas line that would help to mitigate some potential visual impacts.

- (36) Pages 6-8 and 6-9, Table 6-1, Trade-offs Between Identified Impacts and NEPA Goals: This is a very difficult table to understand and we do not see what the trade-offs are under each impact. Also, NEPA goals 8 and 9 are the same in the chart. We cannot see what is supposed to be accomplished in the chart. For example, in the left hand column, eight down, it states, "Loss of some archeological sites not visible from the surface." The NEPA goal is number 11. The trade-off, as the chart shows, is "no way to mitigate potential loss." Mitigation can occur during construction by having an archeologist on the project. If a site is discovered, total mitigation of the site can be accomplished by excavation of the site or rerouting or relocating the facility. There would not be a loss of non-renewable resource, hence, no trade-off.

- (37) Page 7-1, third paragraph: States, "Although the herbaceous vegetation would be replaced through revegetation measures, the loss of 248 acres of forested land would be permanent." (Underlining added.) We feel that the loss of forested land would only occur during the life of the project. Trees can be reestablished after the project has served its useful life and a forest could start again.

- (38) Page 8-11, Alternate Transmission Line Corridors: This Environmental Statement has presented three alternative electric transmission corridors for the proposed line. In paragraph 1, page 8-11, it states, "...Environmental impacts of transmission lines will be examined in a supplemental environmental (EA) written for the individual rights-of-way actions." We disagree and think the DES should have presented the preferred transmission corridor along with the alternative corridors and not produce another document in a separate environmental analysis. The transmission line is just as integral part of this project as the pipeline, central facilities, etc. Your Final Environmental Statement should resolve this major concern.

We realize this Statement was filed prior to implementation of the CEQ Regulations. We would like to become a cooperating agency for the preparation of the FES. }

Sincerely,

Shad
 CRAIG W. RUPP
 Regional Forester

Enclosure

- (36) This material has been added to page 6-8, see Errata section.

- (37) Permanent in this context is considered as the life of the project.

- (38) This material has been added to page 8-11, see Errata section.

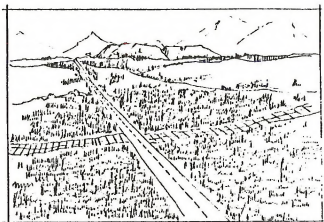
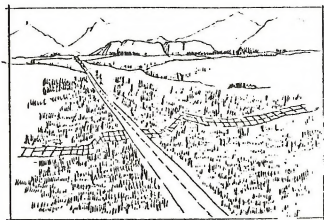


FIG. 36 GENERALIZED VIEW OF PIPELINE CROSSING
U.S. HIGHWAY 51



necessary change to know visual impact



IN REPLY REFER TO
L7619 (SMT) PE

United States Department of the Interior

NATIONAL PARK SERVICE

SOUTHWEST REGION

P.O. Box 25

Santa Fe, New Mexico 87501

AUG 28 1979

Aug 28 1979

Memorandum

To: State Director, Bureau of Land Management, New Mexico
State Office, Santa Fe, New Mexico

From: ~~State~~ Associate Regional Director, Planning and Cultural Resources,
Southwest Region

Subject: Review of Bureau of Land Management Draft Environmental
Impact Statement for CO₂ Project, Masson Field/Denver Unit,
Shell Oil Company, Colorado, New Mexico, and Texas

- (39) We have reviewed the subject document which proposes development of CO₂ well field and gas-conditioning facilities in Southwestern Colorado; construction of an interstate main CO₂ pipeline and associated microwave stations across parts of Colorado, New Mexico, and Texas; and development of facilities for receiving, injecting, recovering, and reinjecting CO₂ from the Denver Unit of the Masson Oil Field in Texas.

The proposed project does not appear to have impacts or potential impacts on any existing unit of the National Park System, or on areas under study or recommendation for possible inclusion in this System.

Urban E. Rogers

- (39) No response required.

PUBLISHING

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ADVERTISING

PUBLISHED WEEKLY



ESTABLISHED 1897

Date 8-25-81

DOLORES, COLORADO 81223

August 24, 1979

Bureau of Land Management
New Mexico State Office
P. O. Box 1449
Santa Fe, New Mexico 87501

Greetings:

I would like to take this opportunity to comment on the Draft Environmental Statement for the CO2 Project: Masson Field/Denver Unit as recently made public by your agency.

First, I feel that notification of the publication of this document and the public comment period were insufficient to allow adequate participation in the review of the DES; therefore, I request that the BLM grant a 90 day extension in the public comment period and hold additional public hearings in the affected areas following more adequate notification of the public through the various news media.

- (40) Second, responding for myself and, I feel, a number of environmentally concerned organizations of which I am a member, including the Sierra Club, the Colorado Open Space Council, Greenpeace and the Colorado Wilderness Network, I strongly oppose the proposed CO2 gathering pipeline from the Doe Canyon East Central Facility that would cross the Dolores River about two miles downstream from the Bradford Ranch as described on page 1-19 of the DES. I would support only Alternative 3 as depicted on map F-12 and pages 8-9, 10 of the DES. The Dolores River in that area, as is pointed out in the DES, has been proposed for scenic designation as part of the National Wild and Scenic Rivers System. Colorado's Third District Congressman Ray Kogovsek has recently announced his support for such designation. Any construction in that area would seriously degrade the scenic status of the river and river corridor for decades to come. By rerouting the pipeline to follow the forest road, visual impacts could be minimized and transferred to a segment of the river where the remaining impact would be less offensive.

Third, I would oppose any construction within the boundaries of the scenic corridors of any of the BLM potential Wilderness Study Areas until final decisions are made concerning possible inclusion in the National Wilderness System. Several such areas are affected by this proposal and alternatives should be proposed in each case.

Thank you for your consideration.

Sincerely,

Lewis McCool
Lewis McCool
Publisher

- (40) This material has been added to page 3-58, see Errata section.



Placitas Fire Brigade
PO Box 567
Placitas, N.M. 87043

August 23, 1979

United States Department of the Interior
 Bureau of Land Management
 New Mexico State Office
 P.O. Box 1449
 Santa Fe, New Mexico 87501

Gentlemen

- (41) The Placitas District Volunteer Fire Brigade, Inc. endorses the remarks made by Jerry Whetstone at the public hearing, held August 14, concerning a proposed pipeline through the Placitas area.

We view the proposed CO₂ pipeline as imposing an unnecessary risk to life and health in our district. Our fire station is located near the proposed pipeline as it would emerge from the Cibola National Forest near the eastern end of the Placitas area. The fire station is nearly at Las Huertas Creek level and considerably lower in elevation than the proposed pipeline to the north.

All of our fire fighting and emergency medical treatment equipment is housed in the one fire station. Given the information in the Draft Environmental Statement, we have grave concerns about our capabilities in the event of a massive leakage of CO₂. Access to this equipment could be nullified, jeopardizing our emergency capability for the entire Placitas Fire District.

Therefore, the Placitas District Volunteer Fire Brigade, Inc. does not support the proposed CO₂ pipeline, however, does support the Alternate Segment A Route which would pass just north of our fire district.

Yours truly

Edward A. McGough
 Edward A. McGough
 President, Placitas Fire Brigade

- (41) This material has been added to page 8-6, see Errata section.



ANDOVAL ENVIRONMENTAL ACTION COMMUNITY

P.O. Box 1220 Bernalillo, New Mexico 87004

August 23, 1979

United States Department of the Interior
Bureau of Land Management
New Mexico State Office
P.O. Box 1449
Santa Fe, New Mexico 87501

Gentlemen

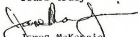
The Sandoval Environmental Action Community (SEAC) endorses the comments made by Jerry Whetstone at the August 14 public hearing concerning the proposed Masson Field/ Denver Unit CO₂ Project.

- (42) Our primary objections to the proposed pipeline route are as follows:
1. Detrimental and long-lasting visual effects in the Cibola National Forest and the Placitas Area.
 2. Disruption of life, air pollution, and congestion in a populated area.
 3. Possible risks to life and health in areas close to the pipeline in the event of a massive leak.

SEAC does not support the proposed CO₂ pipeline, as outlined in the Draft Environmental Statement, based on our above concerns.

SEAC does support the Alternate Segment A Route. This route would involve the least amount of environmental damage, disruption to people's lives, and risk to life and health.

Yours truly


James McKehe
President, SEAC

SANDOVAL COUNTY

1617 McKEHE

Date Routed:
RHS - 9/8/79

2

ONE

(42) This material has been added to page 6-6, see Errata section.

8/24/71

State Director
Bureau of Land Management
11 M. State Office
P.O. Box 1449
Santa Fe, N. M. 87501

D.
AUG 29 1971

2

MS

Dear sir

I am writing to express my comments on the Draft Environmental Statement concerning the Shell Oil Co. proposed CO₂ pipeline project. As a resident of Las Huertas Canyon near the town of Placitas, I am deeply concerned over the visual impact that the proposed pipeline clearing would have. As stated in the DES, an old pipeline is clearly visible after twenty years have gone by and now it is proposed to widen that cut or make a new one. I am strongly opposed to any further destruction of the natural beauty of our area.

Placitas is a small community of homes, chosen by persons who love the area and are willing to commute

52
to work and cope with other inconveniences
in order to live in such a lonely place.

I can see no justification for putting in
this pipeline through the National Forest
in full view of the residents, when
there are alternate routes, away from
homes, and where little or no destruction
of our scarce forest is necessary.

Please add my comments to your
report. I should like to be informed
when the final environmental statement
is published and advised of any further
opportunities I might have for making
known my objections to this proposed
route.

Thank you very much.

Very truly yours,

Josephine Proett
Star Route Box 17A
Placitas, N.M. 87043

425 Glorieta NE
Albuquerque, NM

87123
Date: Aug 28 1979

Mr. Arthur W. Zimmerman
State Director (911)
Bureau of Land Management
Department of the Interior
New Mexico State Office
U.S. Post Office Building, South Federal Place
P.O. Box 1449
Santa Fe, New Mexico 87501

August 24, 1979

Dear Sir:

This letter is in response to the invitation for comments on the adequacy of the Draft Environmental Statement (DES) for Shell Oil Company's proposed CO₂ project. Since our house site is in Las Huertas Canyon near Placitas, we are concerned primarily about the groundwater, surfacewater, visual, and health and safety impact of the main CO₂ pipeline and feel the DES does not adequately address the following aspects.

- (43) (1) Our only source for potable water is our well, which is only several hundred feet from the proposed pipeline. The DES does not adequately address the effect of pipeline construction activity (such as blasting) and operation/maintenance conditions (such as leaks) upon groundwater in the vicinity of the main pipeline.
- (44) (2) The DES discusses the very high visual impact of the existing pipeline at the State Highway 44/Placitas viewpoint on the town of Placitas and the "local recreation travel" on Highway 44, but does not address the even higher visual impact on the residents of Las Huertas Canyon. This canyon is a historic landmark, as evidenced by the Santa Fe Area Historic Landmark. In addition, the canyon is an historic agricultural and trade area. The Las Huertas/La Jara irrigation ditch system has been in use in the canyon for over a hundred years and presently serves about 30 families. The proposed pipeline crosses the ditch system in at least one location. The existing pipeline right-of-way attracts motorcyclists and four-wheel drive tourists who regularly cut the fences and drive up the pipeline into Cibola National Forest. The proposed pipeline would aggravate this already annoying situation and significantly increase erosion in the Cibola National Forest. The DES does not adequately address the effect of the pipeline upon the visual/historic/aesthetic character of the Las Huertas canyon.
- (45) (3) Considering the risk to human health and safety and the length of discussion by the DES of other considerations such as archeological significance predictions, the discussion of health and safety aspects seems quite brief and cursory. Specifically:

(43) Any blasting in the area would be shallow and would not affect the ground water. CO₂ leaks would vent to the atmosphere rather than move to the ground water level.

(44) Residents are also included in assigning the visual impact to an area. See Comment number 14 for the historic aspects of the area.

(45) This material has been added to pages 6-6 and 8-6, see Errata section.

(45)

a. The comparison of the proposed pipeline to the SACROC pipeline may be valid, but the extrapolation of data from one, "similar" 220 mile pipeline which has operated for about 6 years to the 478 mile proposed pipeline to be operated for 30 years seems rather tenuous. To state there would be no expectation of a major leak of CO₂ in the most likely case" (page 6-5) based on this one example is an intuitive conclusion not strongly supported by conventional statistical or probabilistic analysis, particularly in the light of the discussion on the next page which indicates that the probability of pipeline leakage increases with pipeline age.

b. The comparison of the proposed pipeline to data on petroleum and natural gas pipelines cannot be evaluated by the reader because the quoted sources of the data, the Interstate Commerce Commission (1976) and the Department of Transportation Office of Pipeline Safety (1976), could not be found in the reference section and the data used to obtain the worst-case pipeline accident probability (.000945) are not given. Since this probability is used to estimate the number of accidents per year, the generation of this probability should be discussed in more detail and the source references should be given.

c. The calculation of CO₂ gas vented to the air during a major rupture have several interesting features, such as: It is premised that one hour would be required to secure pipeline shut-off. No discussion was found in the DES of microwave controlled valves or electrical control cables in the pipeline trench, so it is assumed that the 32 valves to be located about every 15 miles are manually operated. From the section on maintenance staff (page 1-33), the closest maintenance to Placitas will be seven people at the midpoint station (main CO₂ compressor station) at about pipeline milepost 130, about 80 miles from Placitas. The assumptions involved in arriving at the one hour shut-off time, which must include some time for the people who discover the leak to determine who to notify and the travel time from the maintenance station to the two valve sites (apparently two people since the DES calculations assume the two valves necessary to isolate the leak are shut off at essentially the same time) are not discussed in the DES. Also the CO₂ leakage calculations are for a 20-inch pipeline with a transport rate of 400 mmscf. But, on page 1-21 of the DES it is indicated the pipeline design could be modified to accept larger amounts of CO₂ by increasing the pipe diameter to perhaps 36 inches and/or raising the transport to some unspecified value above 400 mmscf. According to the DES "even if both potential design changes are

- (45) incorporated into the pipeline, there would be no additional environmental impact". Using the same calculations for CO₂ leakage as the DES, but for a 36 inch pipeline instead of a 20 inch pipeline (and with no increase in the 400 mmcsf flow rate) the 36 inch pipeline would leak about 3.4 times as much CO₂ into the air. It does not seem consistent to state the larger pipeline or increased transport rate would have no additional impact when the gas volume leaked is significantly higher.

d. Given that a major leak did occur, most of the conditions stated under which CO₂ gas would become a hazard can or do exist in Las Huertas canyon.

1. periods of no wind in a stable, cold dry air (winter night)
2. an area of relatively high population (The meaning of this statement should be clarified in the DES. Since our house site is within several hundred feet of the proposed pipeline, we, and other families, will be physically close to the pipeline a large percentage of the time)
3. low lying land, such as a river bottom (Las Huertas canyon is a relatively steep, narrow canyon.)

e. The estimated volume of possible leaked CO₂ is calculated in the DES, but it is not discussed in detail how this relates to the area that is potentially hazardous to human and animal life due to displacement of oxygen. Since rather specific conditions are given under which a hazard could exist, it seems reasonable to expect an estimation and discussion of how large an area would be dangerous in the worst case.

- (45) f. The DES indicated a major leak would create "tremendous" noise due to the high pipeline pressure and volumetric expansion, yet says nothing about hazards due to pipe or fill ejecta at the rupture site. Considering the high pressure involved, the DES should discuss this safety factor.

(4) Alternative Segment A appears to be, according to the very brief treatment in the DES, a viable and possibly significantly better route. The DES does not adequately discuss this alternative.

These comments, I hope, are sufficiently detailed to be clear. Due to the short time between hearing of the DES and the public hearing and written comments dates, it was difficult to adequately review the DES and present a comprehensive response. Many of the residents in the Elcietes/Las Huertas canyon area were, and perhaps still are, unaware of the proposed CO₂ project.

J. M. Soden
Jerry M. Soden
President, Las Huertas/La
Jara Community Ditch
Commission

8-27-79

P.O. Box 3118
Las Vegas, N. Mex. 87701
505-454-0827

Sirs,

In regards to the pipeline that is proposed to come thru San Miguel County in the western end of the county is or rather could be very bad. To run this line through a populated area is no good. I just can't see disturbing homes, having a fire risk and other problems that it can cause is silly.

The eastern part of our county has a very small population and is mainly range land. It is also much flatter and will reduce the cost by a great deal it seems to me.

Please ~~don't~~ don't ruin this lovely mountains area with this pipeline.

Sincerely,

Joe W. Britton
Joe W. Britton

Date Routed:

APR 2 1979

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H
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Date Routed:

AUG 12 1979

Kathryn M. Nutz

Gerald R. Jacob

1129 Princeton Ave.

Salt Lake City, Utah

84105

Division of Planning
and Environmental Co-ord.
BLM State Office
P.O. Box 1449
Santa Fe, N.M. 87501

3 CF

RE: Carbon Dioxide Fields Development in the Cortez, CO area

Dear Sirs:

- (46) Unfortunately little notice has been given to residents of the Salt Lake City area about the plans to allow Shell and Mobil Oil Corporations to develop a massive carbon dioxide field on federal lands in the Cortez, CO area. For this reason I have not received any specific plans, information, etc. from the BLM concerning this project. My comments will be based then on an article which appeared in High Country News (Aug. 10, 1979) and information obtained from other sources.

- 1) How can the BLM construct probability models on the likelihood of a rupture when only one such line is in existence? These are not "predictions"; they are seat-of-the-pants speculation. The assumptions upon which these speculations are based may or may not apply to this new technology.
- 2) Over 10,000 suspected archaeological sites are in the proposed field area. Will any inventory be done to assess the quality (scientific and aesthetic) of these "suspected" sites?
- 3) Mr. Doug Scott, the BLM archeologist, seems to think that damage to the sites will be minimal. On what basis? True the pipeline itself may not disturb the sites but we all know that access to archaeological sites destroys many more than drilling rigs. Today relatively few people visit these sites. An increased number of people in the vicinity of the sites means many more people "doin' a little pot huntin' to pick up a few bucks".

- (46) A copy of the DES was sent to Ms. Nutz. We believe it provides answers to her comments.

- 4) Given the BLM's ongoing emphasis on red meat production and asking how can the public be assured that resources, personnel and money will be allocated to protect these sites?
- 5) Mr. Scott commented on the "positive attitude of the oil companies in protecting the cultural resources". If this is so perhaps the BLM could get the companies to commit more than attitudes to the resources' protection. What attempts are the BLM making to make the companies commit themselves to protecting this national resource?
- (47) 6) No where have I been able to find out what the American People will get out of giving some of our land to Mobil and Shell, except more oil at inflated prices. This project should be viewed in a national context. According to the High Country News and the companies' own predictions the project will produce about 290 million barrels of oil over its 30 year lifetime; this means in thirty years it will produce about as much as we import in ONE month, or one days supply for one year of production. I oppose this meaningless expense for such a drop in the bucket. Rather than encouraging the nation's gluttony for oil the BLM should take a leadership role in the conservation of natural resources such as oil. Conservation promises to "treat" more oil per dollar invested than this project.

Thank you for your time and consideration and the opportunity to comment. I would appreciate receiving any information you may have on this project, including a detailed EIS. Thank you.

Sincerely,

Gerald R. Quast
Gerald R. Quast
Kathryn M. Mutt
Kathryn M. Mutt

(47) Conservation is highly desirable, but will not preclude the need for this oil.



Department of Local Affairs
Colorado Division of Planning

Philip H. Schuck, Director



Richard D. Lamm, Governor

August 26, 1979

Date Routed:
AUG 30 1979

☒ RD _____
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State Director
Bureau of Land Management
New Mexico State Office
P. O. Box 1449
Santa Fe, New Mexico 87501

SUBJECT: Draft Environmental Impact Statement
The CO₂ Project - Wason Field/Denver Unit

Dear Sir:

- (48) The Colorado Clearinghouse has received the above-referenced Draft Environmental Impact Statement and has distributed it to interested state agencies. Comments received from the Department of Highways, Department of Health, Division of Water Resources, State Historic Preservation Office, Division of Mines, Division of Planning and the Colorado Geological Survey are enclosed for your information.

Thank you for the opportunity to review this matter.

Sincerely,

Stephen O. Ellis
Stephen O. Ellis
Chief Planner

SE/HK/vt
Enclosure

cc: Office of the Governor
Department of Natural Resources
Department of Local Affairs
Colorado Historical Society
Department of Health

- (48) The letters from the State of Colorado state their requirements. The following comments are in response to specific items. The water needed for construction of the project will be either purchased or from a well. The Federal Land Policy and Management Act requires BLM to consider local land use plans. Cooperative agreements exist with many of the counties.



COLORADO STATE DEPARTMENT OF HIGHWAYS

August 23, 1979

Mr. Philip H. Schmuck
Director
Colorado Division of
Planning
520 State Centennial Building
1313 Sherman Street
Denver, Colorado 80203

AUG 28 1979

P.L. # 111-1111

Dear Mr. Schmuck:

The Colorado Department of Highways has completed its review of the Draft Environmental Impact Statement for the CO₂ Project - Wasson Field/Denver Unit and has the following comments.

Construction traffic generated by the development will have an impact on the highway system and will add to the general deterioration of the roadways in the area. In order to better determine the significance of these impacts, actual projections of construction traffic on state highways should be made.

All highway crossings by pipelines will have to be bored under the highway and encased. It will be necessary to acquire permits from this Department for such work.

On page 1-8 it is stated that existing roads, trails and rights of way will be used for access roads. Turning trails and rights of way into access roads will affect current usage and cause a major change in land use. Have the impacts of such modifications been analyzed?

Thank you for the opportunity to review this document.

Very truly yours,

Jack Kinzinger
Executive Director

By *Ray L. Atchison*
Harvey E. Atchison
Director

Division of Transportation Planning

RG/mh



AUG 23 1979

DM. 00 1250 2

COLORADO DEPARTMENT OF HEALTH

214 EAST 11TH AVENUE - DENVER, COLORADO 80202 - PHONE 320-8333
/ Frank Taylor, M.D., Executive Director

DATE: August 21, 1979

SUBJECT: NON-STATE ASSISTANCE

REVIEW AND COMMENTS

TO: Mr. Stephen O. Ellis
Colorado Clearinghouse
Division of Planning

PROJECT TITLE: CO₂ Project - Wasson Field/Denver Unit - Bureau of Land
Management - #79-132

STATE IDENTIFIER: NA

COMMENTS: WATER QUALITY CONTROL DIVISION

COMMENTS DUE: August 23, 1979

The Water Quality Control Division has no major objections with the proposed CO₂ project. The methods suggested to alleviate and mitigate potential water quality problems seem adequate.

The area of greatest concern to water quality in this project relates to construction runoff and erosion-sedimentation potential during construction of the pipeline. All necessary precautions and mitigating techniques should be considered during the construction phase.

The Soil Conservation Service feels the following items should be considered during the construction phase of all projects. We would appreciate your consideration of these guidelines.

1. The area and duration of exposure of erodible soils should be reduced to the greatest extent practicable.
2. Soils should be protected by using temporary vegetation or mulch or by accelerated establishment of permanent vegetation. Segments of work should be completed and protected as rapidly as consistent with construction schedules.

Micki Barnes
Name, Title

Micki Barnes, Program Administrator

SOC-3, Jan 79

Water Quality Control Division

Page 2

3. The rate of runoff from the construction site should be mechanically retarded and the disposal of runoff should be controlled.
4. Sediment resulting from construction should be trapped in temporary or permanent debris basins.
5. Dust should be kept within tolerable limits on haul roads and at the site by applying water or other dust suppressers.
6. Temporary bridges or culverts should be used where fording of streams is objectionable. Borrow should not be taken from areas where pollution from the operation is inevitable.
7. Temporary measures should be used to keep erosion under control if construction is suspended for any appreciable length of time.
8. Protection against pollutants such as chemicals, fuels, lubricants, sewage, etc., should be provided.
9. Construction should be timed to avoid rainy seasons if practical.
10. Sanitary facilities should not be located over or adjacent to live streams, wells, or springs.
11. Grass or brush fires should be prevented. Burned-over areas usually are vulnerable to erosion.

RICHARD O. LAMM
Governor



W. B. SMITH
Acting State Engineer

DIVISION OF WATER RESOURCES

Department of Natural Resources
1515 Sherman Street, Room 818
Denver, Colorado 80202
Administration (303) 839-3561
Ground Water (303) 839-3567

August 20, 1979

MEMORANDUM

AUG 21 1979

TO: STEPHEN O. ELLIS, STATE CLEARINGHOUSE
FROM: DR. JERIS A. DANIELSON, DEPUTY STATE ENGINEER
SUBJECT: CO₂ PROJECT - WASSON FIELD/DENVER UNIT

DIV. OF ENGINEERING

(48) As requested by your office, we have reviewed the BLM environmental statement for a CO₂ well field and pipeline in the Cortez area. The project is to be located in an area which has a critical water supply situation at the present time and which would be made more critical by the proposed project. The critical (over-appropriated) streams in the project area include the Dolores River above the Dove Creek-Dolores River Supply (Sec. 31, T36N, R13W), McElmo Creek above Cottonwood #2 Ditch (Sec. 6, T35N, R18W), the Mancos River above the Henry Bolen Ditch (Sec. 31, T36N, R13W), the La Plata River including Hay Gulch above the Colorado-New Mexico state line. This means that the entire project area in Colorado is located in an area where no new tributary wells may be drilled and where surface water must be purchased from existing rights if a water supply is required during the irrigation season.

See response #48, p. 61.

The water requirements were not easily located within the text, but the following figures are mentioned:

1. A maximum of 273,000 gallons of fresh water for each of the 140 proposed wells.
2. Approximately 7,500 gallons of water with a possible additional 40,000 gallons for stimulation of each of the 140 wells (1 and 2 are from page 1-11).
3. Twelve to 24 acre-feet of water for hydrostatic testing of each pipeline spread (page 1-30).

August 20, 1979

4. One-half acre-foot of water for hydrostatic testing of each gathering line stream crossing (page 3-21).
5. Water for dust control and construction of 39 miles of new roads and 13 central facilities (pages 3-19 and 3-21).

(48) The total amount of water required for the Colorado portion of the project is unknown but substantial. Therefore, we do not agree with the statements on page 3-21 that the impact of the proposed project on ground and surface water is limited or minimal. We also suggest that BLM begin examining the impact of projects on water quantity in more detail, rather than concentrating exclusively on water quality in its environmental statements. Water can generally be treated to increase its quality, but there are few feasible ways to increase the total quantity of water in an arid state, particularly one such as Colorado that is also a source of water for all of the surrounding states due to its commitments to Interstate compacts.

See response #48, p. 61.


Joris A. Danielson

JAD/SSH:mvf



COLORADO
HISTORICAL
SOCIETY

The Colorado Heritage Center 1300 Broadway Denver, Colorado 80203

August 9, 1979

AUG 11 1979
DIV. OF PLANNING

Mr. Stephen O. Ellis
Principal Planner
Department of Local Affairs
Colorado Division of Planning
520 Centennial Building
Denver, CO 80203

Dear Mr. Ellis:

This office has received and reviewed the CO₂ Project - Masson Field/Denver Unit, Bureau of Land Management.

We find that Cultural Resources will have been adequately considered if the procedures outlined by the Bureau of Land Management (p. 1-39) and the Advisory Council on Historic Preservation (p. 1-44) are adhered to.

I find that the predictive model developed by Woodward-Clyde Consultants very interesting and anticipate receiving the results of the survey to ascertain whether the predictive model for archaeological resources was successful.

Sincerely,

Arthur C. Townsend
State Historic Preservation Officer

ACT(RJL):ng

cc: B. Rippeteau, State Archaeologist
J. Hartmann, Coordinator, Historic Preservation



ROBERT H. C. LAMM
DE-LANDER

COLORADO DIVISION OF MINES

DEPARTMENT OF NATURAL RESOURCES
1212 Sherman Street, Denver, Colorado 80202 Telephone 625-3401
Norman R. Blake, Director



August 10, 1979

TO: Division of Planning
via Robert Sick

FROM: Norman R. Blake *Norman Blake*

SUBJECT: The CO₂ Project - Wassoo Field Unit

AUG 13 1979

DIV. OF MINING

Our review of the draft Environmental Statement, CO₂ Project indicates the project would have two main advantages:

1. Develop our domestic resources;
2. Enhance recovery of domestic crude oil.

We did not review the surface disturbance, drilling locations, construction, etc. except from the safety and health viewpoint and have found this area satisfactory.

This pipeline is by far the most economic, with minimum disturbance, method of getting this valuable resource to the Texas oil fields for additional recovery of oil. We do not find anything about this project that is questionable so feel that we should support its implementation fully.

NRB:ak



Department of Local Affairs
Colorado Division of Planning

Philip H. Schmuck, Director



Richard D. Lamm, Governor

MEMORANDUM

DATE: August 9, 1979
TO: Stephen G. Ellis, Colorado Clearinghouse
FROM: Philip H. Schmuck, Director *P.H.S.*
SUBJECT: CO₂ Project--Wasson Field/Denver Unit
Draft Environmental Statement #79-132

The Division of Planning has reviewed the above-referenced environmental impact statement and offers the following comments:

- (48) In the section on land use plans, the environmental statement ignores any local land use plans. The environmental statement should identify which of the affected counties in Colorado have adopted land use plans or zoning plans, and whether or not the proposal is in compliance with those plans. Such a description should include not only the compatibility of the CO₂ Well Field, but should also mention any apparent incompatibilities of land use along the route of the pipe line.

See response #48, p. 61.

On page 1-45, the environmental statement mentions state permits that may be required for the project. No permits are listed for the State of Colorado, although permits will be required for highway crossings, construction through streams or rivers, burning of debris or cut vegetation, etc. In addition, the environmental statement should include permits that may be required by local government. County land use administrators should be consulted to determine what permits or zoning approvals must be acquired prior to construction.

The State of Colorado has developed a set of growth accommodation policies entitled the Human Settlement Policies. The proposal is generally consistent with those policies providing that most of the construction force which moves to the area can be accommodated within the City of Cortez. The policies would discourage accommodation of the work force through outlying, rural developments or isolated housing. We would strongly encourage the project developers to work closely with the City of Cortez to enhance their ability to plan for and accommodate the proposed growth.

Thank you for the opportunity to comment on this matter.

PHS/CJ/btc

WILLIAM F. CLEMENTS, JR.
GOVERNOR



OFFICE OF THE GOVERNOR

August 22, 1979

Letter Received

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Mr. Arthur W. Zimmerman, State Director
U. S. Department of Interior
Bureau of Land Management
P. O. Box 1449
Santa Fe, New Mexico 87501

Dear Mr. Zimmerman:

The Draft Environmental Statement, CB, Project, Mason Field/Denver Unit prepared by the Bureau of Land Management, Department of the Interior has been reviewed by the Budget and Planning Office and interested State agencies. Copies of the review comments are enclosed for your information and use. Project number 9-07-015, has been assigned to the project.

The following specific comment is noted for your consideration: the Texas Department of Water Resources comment no. 1 suggesting that more emphasis be given to a continuing monitoring program.

The Budget and Planning Office appreciates the opportunity to review this document. If we can be of further assistance in this matter, please do not hesitate to call on us.

Sincerely,

Gerald C. Harley

Donald E. Harley, Manager
Economic and Natural Resources
Budget and Planning Office

DEH:j1

Enclosures: Comments by -
Texas Department of Water Resources
Railroad Commission of Texas

TEXAS DEPARTMENT OF WATER RESOURCES

1700 N. Congress Avenue

Austin, Texas



Harvey Davis

Executive Director

August 6, 1979

TEXAS WATER DEVELOPMENT BOARD

A. E. Hibel, Chairman

John H. Gentry, Vice Chairman

Milton F. Potts

George W. McChesley

Glen E. Blum

W. D. Hardison

RECEIVED

AUG 8 1979

RECEIVED

TEXAS WATER COMMISSION

John M. DeLoach, Chairman

Don E. Harkness

Joe R. Cox, Jr.

Mr. Paul T. Wrotenbery, Director
Governor's Budget & Planning Office
Executive Office Bldg.
411 West 13th Street
Austin, Texas 78701

Re: U.S. Department of the Interior, Bureau of Land Management -- Draft
Environmental Statement on the CO₂ Project, Wason Oil Field/Denver Unit.
July 13, 1979. (State File Reference: DEIS-9-07-015).

Dear Mr. Wrotenbery:

In response to your July 20 memorandum, the Texas Department of Water Resources (TDWR) has reviewed the referenced draft environmental statement (DES), prepared by the Bureau of Land Management (BLM) relative to Shell Oil Company's application for rights-of-way for the construction of a pipeline and related facilities to transport carbon dioxide (CO₂) from southwest Colorado through New Mexico to the Wason Oil Field near Denver City, Yookam and Gaines Counties, Texas for oil recovery purposes, and associated drilling authorizations within the CO₂ well field. The proposed project consists of the following basic components: (1) development of a CO₂ well field in Montezuma and Dolores Counties, Colorado consisting of approximately 250 wells and 13 central facilities with the necessary access roads and connecting pipelines to enable removal of 400 million standard cubic feet of CO₂ per day; (2) construction of a 478-mile long interstate pipeline, across parts of Colorado, New Mexico, and Texas -- from Montezuma County, Colorado to Yookam/Gaines Counties, Texas; (3) construction of CO₂ injection facilities in the Wason Oil Field, near Denver City, Texas for use in the tertiary recovery of an estimated 200 million barrels of oil from the Denver Unit of the Wason Oil Field; and (4) construction of a microwave communication system of 14 towers, and electric transmission lines to provide necessary power requirements.

The CO₂ will be produced by Shell Oil Company and Mobil Oil Corporation. The project is planned to start in January 1980, to be operational in 1982, and continue in operation for approximately 30 years (2012).

TDWR offers the following staff review comment on the water-related aspects of the project component in Texas, (see pages 1-33 to 1-35), involving the

construction of 100 new injection or producing wells, 25 miles of new flow lines, modifications to 34 existing satellite stations, 42 miles of new gas gathering, 5 field booster compression stations, one CO₂ processing plant and injection compression station, and 100 miles of new injection pipelines:

1. Pages 1-33 to 1-35, 1-45; 2-30 & 2-31; 3-25; 4-1 to 4-3; 5-1 to 5-5; 6-4 to 6-6.

Based on our analysis of the water resources quality management aspects of the Texas component of the proposed project (i.e., "Oil Field"), as described in the above-captioned pages, TDWR concurs in the "Impact Conclusion," presented on page 3-25. Further, TDWR believes reasonable assurances are implied in the DES that the adverse impacts and risks will be minimized, and that the project will be designed, constructed, operated, maintained, and monitored, so as to be consistent with applicable State and Federal water quality management standards and guidelines.

- (49) However, the referenced DES does indicate that some of the expected impacts may be both unavoidable and irremediable (e.g., increased acidity and corrosivity of groundwater in the CO₂ injection well field over a 30-year period -- see page 3-25). Therefore, TDWR feels that more emphasis should be given to the importance of a continuing program of post-EIS follow-up monitoring to ensure that appropriate and practical adjustments will be made during the life of the project, and that insight gained can be applied to the improvement of future geological, hydrological, and chemical predictions relative to groundwater and surface water supply affected by the project.

2. Pages 5-2; 6-4 to 6-9.

The tabulated summary on the above-captioned pages reflect that the referenced DES reasonably fulfills the administrative, coordinative, and analytical requirements of Sections 101.6 and 102.2(C) of the National Environmental Policy Act of 1969, whereby major problem areas and risks, and alternative courses of action have been identified, analyzed, and marked for further study and/or monitoring.

Given the exigencies of our present national energy circumstances, the potential, perceived risks to water resources over the 30-year project operational period, do not appear a weighty deterrent at this time to proposed oil recovery effort. However, we feel that some recognition should be given to the applicants' and sponsors' willingness and readiness to modify operations when consequences of CO₂ accumulation in the environment become more clear than they are today. We note the following assessment on page 6-3:

- (49) The oil wells are deeper than the water producing wells and no cross contamination should occur. Special coatings and metallurgical considerations are to be utilized in both injection and producing wells plus corrosion inhibitors would be used in producing wells. Both CO₂ injection and producing wells will be monitored for effects of CO₂ corrosion during production.

Mr. Paul T. Wrotenbery
August 6, 1979
Page Three

"The technology of CO₂ enhancement of oil production is still evolving; it is impossible to estimate how much of the CO₂ gas would be used for other projects, or for industrial uses."

3. Page 9-6.

As indicated in the tabulated data on page 9-6, TDMR will continue to work closely with all agencies concerned to ensure timely input into project development insofar as water-related matter within our statutory purview.

TDMR appreciated the opportunity to participate in the interagency review of the referenced DEIS. Please advise if we can be of further assistance.

Sincerely,

Harvey Davis
Executive Director



UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
Field Supervisor
Ecological Services
U.S. Fish and Wildlife Service
Suite C
8530 Pan American Highway, NE
Albuquerque, New Mexico 87107

August 31, 1979

Date Mailed:

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Memorandum

To: State Director, Bureau of Land Management
Sante Fe, New Mexico

From: Acting
Field Supervisor, FWS, Ecological Services,
Albuquerque, New Mexico

Subject: Review of Draft Environmental Impact Statement on the CO,
Project Masson Field/Denver Unit, New Mexico Portions, (BLM)
(Arthur Zimmerman's July 14, 1979 transmittal)

We have reviewed the subject document and have the following comments to submit.

General Comments:

- (50) The draft environmental statement indicates considerable disturbance of existing vegetation will occur with the proposed project. On pages 1-37, 1-38, 1-42, 1-43 and 3-31 mention is made that natural revegetation may take from 1-50 years, depending on local conditions. In order to mitigate potential impacts to wildlife habitat, we suggest that the pipeline developer be required to revegetate with natural grass forb, shrub and tree species that provide food and cover values for wildlife species. Reestablishment of trees in riparian zones should receive specific emphasis.
- (51) Discussions regarding consideration for endangered species are presented on pages 1-44, 2-39, 3-41 and 5-3. Mention is specifically made on page 1-41 that Section 7 consultation will be carried out. We believe the final EIS should contain

(50) See Comment number 1.

(51) A letter requesting Formal Consultation for the endangered species was sent to the U.S. Fish and Wildlife Service on October 15, 1979. This letter requested consultation for two species (1) peregrine falcon and (2) black-footed ferret. The response is expected within 90 days of the above date.



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- (51) information relative to the findings of the formal Section 7 consultations. Page 3-44 specifically mentions that certain listed species may be impacted, thus Section 7 consultation appears to be required. Mention is further made that the black-footed ferret will not be affected by this project because this species is rare and has not been recently observed in the project area. The final EIS should include substantiating documentation regarding research, field studies, and other actions that led the BLM to conclude that ferrets will not be impacted.

Specific Comments:

- (52) Page 1-40, Authorizing Actions, U.S. Army Corps of Engineers: Mention is made that the project meets the conditions of a nationwide Section 404 permit. The nationwide permit provides for pipeline crossings in streams and wetlands if certain conditions are met. Discussion of the specific conditions and how the project meets those conditions would assist the reader.
- (53) Page 3-40, Fish: It is unclear from the discussion if it is necessary to dewater aquatic habitats during construction of the crossings. If dewatering is required; what will be the duration, how will water be diverted, and what impacts are likely to occur?
- (54) Page 3-40, Wildlife: One possible impact of pipeline construction is the creation of a barrier (physical or behavioral) to certain wildlife species. Wildlife movements may be impaired due to barrier effects of bare ground or characteristics of revegetation. This potential impact should be discussed in the final statement.
- (55) Page 3-41, Endangered and/or Threatened Fish and Wildlife: Mention is made that impacts to black-footed ferrets are negligible. A possible prevention measure would be to avoid prairie dog towns during routing of the pipeline.
- (56) Pages 3-40 and 3-42, Wildlife and Summary: An erroneous assumption is made regarding the mobile forms of wildlife. While it is true that the individual animal may be able to avoid actual destruction by fleeing construction zones, loss of habitat ultimately results in loss of wildlife.

- (52) The nationwide permit can be obtained by contacting the Corps of Engineers.

- (53) This item is discussed on page 1-27.

- (54) Wildlife impacts as a result of any "barrier" effects are expected to be minor.

- (55) The possible impact to black-footed ferrets is being considered in the Section 7 consultation. See Comment 50.

- (56) This loss of wildlife is acknowledged in the DES. The loss of habitat would be small in any one area.

because adjacent habitats are often at carrying capacity. Mitigation could be provided for habitat losses by increasing carrying capacities through more intense management in adjacent habitat.

Thank you for the opportunity to comment on this draft environmental impact statement.

Joel H. McMillin

Attina

Robert D. Pacific

cc:

Director, New Mexico Department of Game and Fish, Santa Fe, New Mexico
Regional Director, FWS, Ecological Services, Albuquerque, New Mexico
Area Manager, Phoenix, U.S. Fish and Wildlife Service, Phoenix, Arizona
Director, U. S. Fish and Wildlife Service, Attn: Ecological Services,
Branch of Pipelines, Washington, D. C.



IN REPLY REFER TO:

17619 (RMR)PC

United States Department of the Interior

NATIONAL PARK SERVICE
ROCKY MOUNTAIN REGIONAL OFFICE
655 Parfet Street
P.O. Box 28287
Denver, Colorado 80225

AUG 31 1979

Date Routed:

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Memorandum

To: New Mexico State Director, Bureau of Land Management, Santa Fe, New Mexico

From: Associate Regional Director, Planning and Resource Preservation, Rocky Mountain Region

Subject: Draft Environmental Statement, CO₂ Project, Wasson Field/Denver Unit (ER 79/37)

On behalf of the Regional Director we have reviewed the subject document, draft environmental statement (DES), and have the following comments.

We are pleased that most of the preliminary comments we made informally last February have been incorporated in the DES. However, at page 3-16 we continue to believe that the effects of erosion are written off too lightly. We still think that erosion rates of +270 percent for the field and +330 percent for the overall project should not be considered as minor effects.

- (57) Maps 1-5 and 8-1 show the proposed pipeline passing between the town of Mancos and Mesa Verde National Park, while map F-3 shows the pipeline passing north and west of Mancos. We assume map F-3 to be correct as it has the greater detail. That map indicates that near the center of Section 20, Township 36 North, Range 13 West, the pipeline crosses the aqueduct supplying water to Mesa Verde National Park. The aqueduct is 6-inch concrete lined steel pipe operating under approximately 500 psi. This line is about 30 years old and could be placed under severe stress with major construction in its vicinity.

For your information, enclosed are two maps showing the line of the aqueduct from the northeast corner of Section 20 towards the center and the depth at which it is buried. If the location is different, please let us know so we can furnish the appropriate maps. Please contact the Superintendent at Mesa Verde National Park, Colorado 81330, about obtaining a permit to cross the aqueduct. You should inform him of the precise location of the

- (57) The NPS will be notified when and where their water line will be crossed.



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proposed crossing, depth of the pipeline, construction techniques, and any other details on measures that would be taken to protect the aqueduct from damage or of repairs that would be made if the aqueduct were damaged. The Superintendent would also appreciate being put on your mailing list for future announcements about this project.

- (58) In the proximity of Hovenweep National Monument's Goodman Point unit, a CO₂ line from this well will run along the northernmost boundary of the Goodman Point unit. The Goodman Point unit is considered by many to be the largest Pueblo III ruin in the Mesa Verde area. When considered in context with smaller outlying ruins, particular in Sections 4 and 33, it takes on a much greater magnitude of national importance and significance to the archaeological and cultural resources of the nation. We have consulted with Dr. Arthur Rehn of Wichita State University and believe that the outlying ruins, although presently not part of the monument, are nonetheless archeologically part of the ruins complex. The proposed 60-foot right-of-way for the CO₂ wet line and proposed improvements to the existing road to attain a 40-ton standard all-weather road could generate effects of unknown consequences within this ruin's complex.
- Accordingly, we proposed that the wet line be located along the road running north and south bisecting Section 34, T37N, R17W, tying in with the proposed CO₂ wet line running along the northern boundaries of Section 32, 33, 34, T37N, R17W. The attached map delineates our proposed alternative.

- (59) Page 2-50. The statement that none of the altes in the McKino Dome Field is on the National Register of Historic Places is erroneous. Hovenweep National Monument and the Bureau of Land Management-administered Lowry Ruins are both on the National Register. See the Federal Register of February 6, 1979, Part 11.

Page 2-73. Escalante Ruins is a National Historic Landmark, not a National Monument.


Richard A. Strait

Enclosures 2

(58) This alternative will be considered.

(59) This material has been added to page 2-51, see Errata section.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VI
1801 ELM STREET
DALLAS, TEXAS 75201

Date Received:
SEP 25 1979

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September 24, 1979

Mr. Arthur W. Zimmerman
New Mexico State Director
Bureau of Land Management
P.O. Box 1449
Santa Fe, New Mexico 87501

Dear Mr. Zimmerman:

We have completed our review of the Draft Environmental Impact Statement (EIS) for Shell and Mobil Oil Company's proposed Wasson Field/Denver Unit CO₂ project. The proposed project includes developing a CO₂ well field in southwestern Colorado; constructing a pipeline across parts of Colorado, New Mexico, and Texas; and developing facilities to receive and inject CO₂ into oil wells located at the western edge of Texas. The CO₂ will be injected into the oil producing zones as a tertiary recovery method to extract otherwise unobtainable oil. We offer the following comments for consideration:

(60) Other Sources of CO₂

On page 8-1, the statement is made that there are no alternative CO₂ resources available, but page 2-14 states "...dolomite and limestone are common west of the Pecos River." Since both dolomite and limestone can be mined and CO₂ extracted, these statements appear to be contradictory. The Final Statement should clarify the seemingly contradictory statements.

Other CO₂ sources are known to exist closer to the Wasson Oil Field than the proposed site. The EIS would be a stronger document if it explained the reasons why alternate sources were not considered further.

(61) Future Uses of Pipeline/Field

The MAMCO project is being analyzed at this time which includes laying a long pipeline from the Northwest to near the Wasson Oil Field in Texas. The possibilities for using the same pipeline route for both pipelines should be explored in the Final EIS.

(60) Treating dolomite and limestone is not a practical method to obtain the quantities of CO₂ required for the project. The CO₂ in the well field is in the free state. Other sources of CO₂ closer to the Wasson Oil field are controlled by other organizations and are not available to the applicant.

(61) The MAMCO project is scheduled to use the same corridor for much of the route.

BLM Wilderness Area Study

- (62) The Draft Statement recognizes that some Bureau of Land Management (BLM) lands potentially suitable for wilderness will be affected by this project. The EIS should contain maps of the boundaries of unroaded areas under consideration for further evaluation. The EIS should also more explicitly state the kinds of activities (such as road-building and construction of permanent facilities) that are not compatible with areas to be protected until the wilderness study is complete.

Erosion Problems

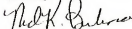
- (63) The 140 well sites, 192 miles of access roads and 318 miles of CO₂ gathering pipelines represent a large potential for erosion in this arid land unless a dedicated effort is made to prevent this from occurring. The Best Management Practices of the BLM, the Forest Service and applicable State 208 recommendations should be carefully followed.

These comments classify your Draft EIS as LO-2. Specifically, we have no objections to the project as described in the Statement; however, we are requesting that additional information be supplied. Our classification will be published in the Federal Register according to our responsibility to inform the public of our views on proposed Federal actions, under Section 309 of the Clean Air Act.

Definitions of the categories are provided on the enclosure. Our procedure is to categorize the EIS on both the environmental consequences of the proposed action and on the adequacy of the Impact Statement at the draft stage, whenever possible.

We appreciated the opportunity to review the Draft Environmental Impact Statement. Please send our office two copies of the Final Environmental Impact Statement at the same time it is sent to the Office of Environmental Review, U.S. Environmental Protection Agency, Washington, D.C.

Sincerely,



Adriene Harrison
1st Regional Administrator (6A)

Enclosure

- (62) The final inventory for wilderness will be done prior to construction in 1981. Only minor conflicts appear to occur. These can be resolved by small deviations in the routing of the pipeline. There will be no construction allowed in the final wilderness study areas until congress makes its decision.

- (63) This is covered in Chapter 1 of the DES. See atipulations 1,2,3,4,5,6,7,8 and 10. Also refer to Chapter 6. In the long term it is anticipated that the project may reduce erosion along several portions of the pipeline route.

ENVIRONMENTAL IMPACT OF THE ACTION

LO - Lack of Objections

EPA has no objections to the proposed action as described in the draft impact statement; or suggests only minor changes in the proposed action.

ER - Environmental Reservations

EPA has reservations concerning the environmental effects of certain aspects of the proposed action. EPA believes that further study of suggested alternatives or modifications is required and has asked the originating Federal agency to re-assess these aspects.

EU - Environmentally Unsatisfactory

EPA believes that the proposed action is unsatisfactory because of its potentially harmful effect on the environment. Furthermore, the Agency believes that the potential safeguards which might be utilized may not adequately protect the environment from hazards arising from this action. The Agency recommends that alternatives to the action be analyzed further (including the possibility of no action at all).

ADEQUACY OF THE IMPACT STATEMENT

Category 1 - Adequate

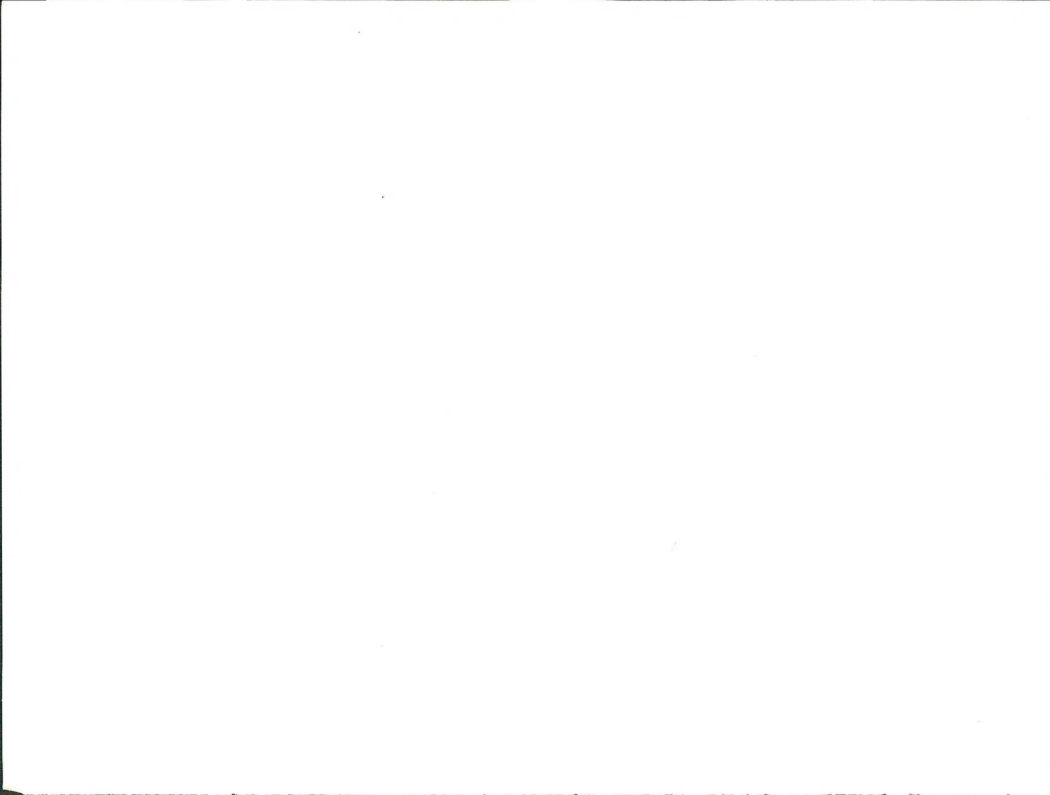
The draft impact statement adequately sets forth the environmental impact of the proposed project or action as well as alternatives reasonably available to the project or action.

Category 2 - Insufficient Information

EPA believes the draft impact statement does not contain sufficient information to assess fully the environmental impact of the proposed project or action. However, from the information submitted, the Agency is able to make a preliminary determination of the impact on the environment. EPA has requested that the originator provide the information that was not included in the draft statement.

Category 3 - Inadequate

EPA believes that the draft impact statement does not adequately assess the environmental impact of the proposed project or action, or that the statement inadequately analyzes reasonably available alternatives. The Agency has requested more information and analysis concerning the potential environmental hazards and has asked that substantial revision be made to the impact statement. If a draft statement is assigned a Category 3, no rating will be made of the project or action, since a basis does not generally exist on which to make a determination.



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